The Iron Age

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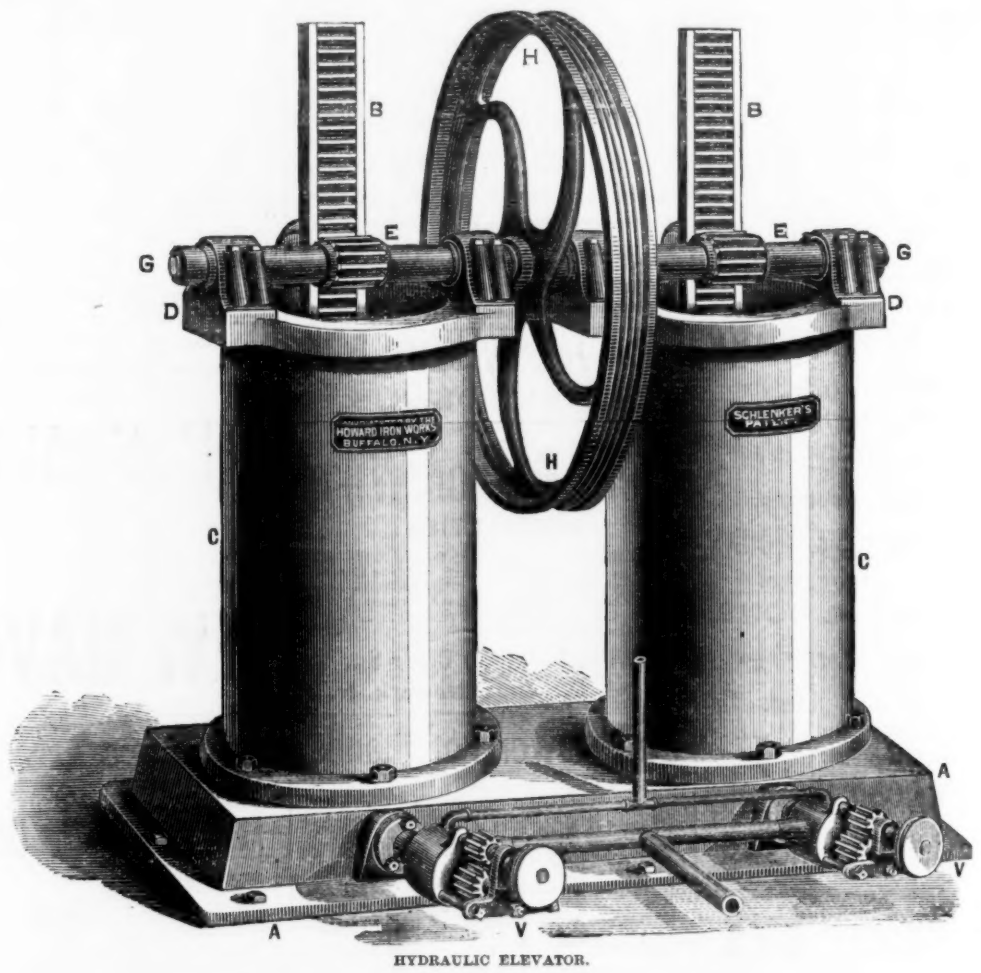
Hydraulic Elevator, by the Howard Iron Works.

The advantages of an elevator are no longer a matter of discussion, the question of their introduction now being almost entirely one of first cost and expense of running. The Howard Iron Works, of Buffalo, N. Y., are building a hydraulic elevator, illustrated upon this page, which, while it possesses all those provisions for safety, ease and speed of working which are absolutely essential in a first-class elevator, has many very important points of advantage in its mechanical details and method, cost of operation, etc. The motive power employed is water under pressure, taken from the street mains. In cases where there is no water service, a tank is placed in the roof and water is raised to it by a pump worked by compressed air. The machine consists of two cylinders, C C, placed upon the bedplate, A A. Within these cylinders are pistons to which are attached the racks, B B. As these pistons rise and fall, the racks move up and down, turning the pinions, E E, shaft, G G and the winding drum, H. The shaft is carried by the pillow blocks, D D. V V are the pulleys of the valves through which water is admitted and allowed to escape from the cylinders. A machine of the style shown takes up a floor space of 4 feet by 7; a one-cylinder machine, 3 feet by 4. The foundation is laid with common stone in water lime, and anchors are walled in for the reception of the bed plate. The top of the foundation is left about 2 feet below the floor line. The bed plate is a cast iron frame with water inlet for each cylinder, and is bolted to the foundation. The cylinders made of cast iron, tested at 300 lbs. to the square inch, are from 18 to 36 inches in diameter, and 4½ to 6 feet high, according to the work they have to perform. For sizes above 24 inches diameter, 2 rack bars and pinions are used in each cylinder. They are bored parallel and polished to save the packing from wearing, and are secured with bolts to the bed plate. The top is left open. Pillow blocks are secured to the top of cylinder and lined with anti-friction steel rollers, so as to get the full benefit of the water pressure. The piston is solid, with an automatic air valve for allowing any air to escape which the water may carry in. The packing is a cup leather, same as used in hydraulic presses, and forms the tightest joint. The rack is made of steel, with flange cast on each side of the teeth. The bottom is bolted firmly to the piston. The back of the rack is held to the pinion by a roller. The pinion is made of cast steel and covers the shaft the entire length between the pillow blocks, which prevents the shaft from springing. The shaft is also made of steel. The winding drum is made from 4 to 8 feet in diameter, grooved to receive the ropes. The valves are balanced, without any packing, operated from the car or platform, and graduated so as not to have a sudden stop and start, which would bring an extra strain on the water pipes. They open and shut gradually. The elevator can be run at any speed from 50 to 100 feet per minute. The quantity of water used is stated by the manufacturers to vary with the load raised. Much advantage is claimed in placing the cylinders in a vertical position in preventing dirt or sand in the water from cutting the cylinders. Automatic lubrication of the pistons is obtained by allowing a small quantity of oil to float upon the water within the cylinder on top of the piston. Not requiring a steam engine or an engineer, these hydraulic elevators can be used in a great many situations where the steam engine cannot be used, especially as skilled attendance of any kind is not needed.



HYDRAULIC ELEVATOR.

The Oil Region of Tennessee.

BY J. B. KILLEBREW,

Commissioner of Agriculture, Statistics and Mines.

The oil territory of Tennessee occupies the extreme southern end of the great oil belt which extends in a southwesterly direction from Ontario, Canada, through New York, Pennsylvania, West Virginia, Kentucky, and, as far as known, terminating in Tennessee. The belt widens out at both extremities, bearing to the westward in Canada around Lake Erie, and spreading out laterally in Tennessee, so as to comprise Dickson and Hickman counties lying west of Nashville.

The following counties are included or supposed to be included in the oil region of Tennessee, viz.: Overton, Clay, Putnam, Fentress, Jackson, Trousdale, Sumner, Davidson, Dickson and Hickman. In all these some petroleum has been found. But by far the most numerous indications have been met with in the counties of Overton, Putnam, Clay and Fentress, all of which lie at the western foot, and even include a part of the Cumberland table-land.

This belt belongs mainly to that natural division of the State called the Highland Rim, which surrounds like the rim of a plate the great silurian limestone basin in which Nashville is situated. For the most part the formations of the oil region pertain to the subcarboniferous, though the streams have cut deep channels through this formation and the devonian black shale, to the Cincinnati or Nashville group of the lower silurian. The Devonian age in the Tennessee oil region, unlike that of Pennsylvania, has but one representative, and that corresponds to the Hamilton black shale of New York. The Corniferous, Marcellus, Portage, Chemung and Catskill are all wanting; also the whole of the upper silurian formations. The upper silurian appears west of Nashville, and to a limited extent in the western part of Sumner county northeast of Nashville, where the meniscus gray limestone of the Niagara epoch is present in considerable volume, estimated at 120 feet in thickness. It thins out further eastward, and totally disappears in the oil belt of Tennessee.

The coal measures cap the highest points in the eastern part of the oil region, and are also met with near the crests of such isolated peaks as Pilot Knob and Alpine Mountain, both outliers of the Cumberland table-land, but separated from it by profoundly eroded chasms. The subcarboniferous, consisting of two groups—the mountain limestone and silicious group—has a widespread development, the mountain limestone, about 400 feet thick, occurring in limited areas, forming benches on the slopes of the Cumberland table-land and its outliers, and also appearing on the sides of the terrace lands, which occupy a considerable part of the county. The silicious group covers fully three-fourths of the belt, and is the foundation for the clay uplands. This group has two members: 1st. The lithostration or coral bed; 2d. The lower silicious or protean bed, which underlies the first. The lithostration or coral bed covers extensive areas, and may be always known by the presence of a fossil coral (*lithostration canodense*) resembling a "petrified hornet's nest." This formation is also always characterized by the presence of sink holes showing the existence of underground channels. The town of Livingston is built upon a bed of this coral. This bed is about 200 feet thick, and its top layers consist often of heavy bedded grayish limestone, known as the St. Louis limestone. Some of it is highly crystalline, and makes a respectable marble. The lower silicious or protean bed, about 270 feet thick, covers all the region around Spring Creek, at which place the greatest quantity of oil has been obtained; also the undulating lands south of Livingston and the flat lands on the west. It displays itself in frequent depressions in the north and northwestern portions of the county. It takes numerous forms; sometimes its top layers are a fine grained, exceedingly porous, yellowish sandstone. This often overlies a limestone, bluish, fetid, crinoidal. Oftentimes for this limestone is substituted another layer exceedingly silicious, filled with nodules of chert or interstratified with thin and thick layers of the same material. These cherty layers sometimes displace the calcareous material altogether. Again, the Keokuk shales, hard, bluish, thin and calcareous, usurp the place of the sandstone, grayish limestone and cherty layers, and form a continuous shaly bed 250 feet thick. This is the case on Eagle Creek in the northeastern part of the county. The bluffs below Waterloo Falls on Spring Creek are composed of a great thickness of a crinoidal limestone, in which crinoidal buttons and stems form a considerable part of the mass. The same is true with some of the bluffs on Obeys River. Above Waterloo Falls the silicious limestones prevail.

Immediately below the sub-carboniferous comes the devonian black shale, highly charged with petroleum and fissured by numerous vertical crevices, which make it resemble, where exposed, a tessellated floor. It is seldom met with as a top formation. A few limited areas, where it appears as such, may be found near the mouth of Eagle Creek, where there are several oil springs, and in the beds of some of the streams as they approach Obeys and Cumberland rivers. It is, however, a very persistent formation, and may always be found throughout the State in its proper geological horizon. Its usual thickness in the Tennessee oil region is from 26 to 35 feet.

The Cincinnati or Nashville group of the lower silurian presents itself in the beds or inclosing banks of the principal streams as they approach the Cumberland River.

As might be inferred from the great diversity of geological formations, the topographical features are striking, and show variety in an eminent degree. There are rugged hights, rolling plains, level plateaus, rocky gorges and deep sunk valleys, and coves sheltered between the massive walls of towering hills. The Cumberland table-land has scolloped edges displaying a very rugged contour, steep escarpments, sloping sides roughened by shapeless bowlders. The sides of the mountain are furrowed by many a stream. Chasms great and terrible, profound in their depths and striking in their suddenness, form one of the principal features of the western mountain. Spurs shoot out for many a mile into the lower plains. Many of these are dissected by transverse gorges having isolated peaks nearly or quite as high as the Cumberland mountain itself. The top of the mountain has all the characteristics peculiar to this division of the State—that is to say, level areas on the summit, a thin soil resting upon a conglomerate sandstone, from the crumbling down of which it has been derived; scraggy timber, open vistas, freestone and chalybeate water. Two or three seams of good coal are usually found under this cap of conglomerate rocks interstratified with shales and sandstones. The land is thinly wooded, the surface covered usually in summer with a luxuriant growth of native grasses and pea vines, and furnishing a large amount of highway pasturage. But few habitations are found here, and this part of the oil region is almost as wild as when the Indian roamed in all his fearless independence through its silent forests.

Upon this mountain there is every condition of health. There is a life-giving property in the atmosphere that imparts elasticity to the frame, giving joy to the heart and animation to the soul. The mind and body receive a new vitality by being bathed in this pure mountain air, which produces an exhilaration of spirits beyond that of any drugs. Consumption never occurs here. The time is not now, but it will come, when the edges of this mountain will be covered with the palaces of the rich and the cottages of the poor, who will come to enjoy the perpetual delight of breathing the mountain air

Having given the general geological features and topographical outlines of the central oil region, it remains to give a few general facts in reference to the oil wells which have been bored and the oil springs which are found in numerous localities in this oil region. On Spring Creek the productive wells were sunk near the eastern margin of that stream, in a low, flat place inclined to be swampy. An expanse of rolling land spreads out eastwardly for about three miles. On the southeast and northeast, spurs rise to the hight of 100 feet or more, showing on their sides thick ledges of the St. Louis limestone. Beyond these spurs on the east the gray outlines of the Cumberland table-land appear, giving grandeur and beauty to the scene.

This oil valley is 3½ miles long by three-quarters of a mile wide. Its elevation above the sea is about 960 feet. All the wells bored at this place were commenced about 175 feet above the black shale.

Eleven wells were bored within an area of 150 acres, but all the productive wells could have been inclosed within an area of 5 acres. Oil was found in two or more zones, one at from 19 to 20 feet below the surface, and the other (by far the most productive zone) from 51 to 69 feet. Probably 20,000 barrels of oil flowed from two wells (underground lakes in the lower silicious formation), some others yielding a less quantity. Out of the 11 wells bored 5 were productive and 6 were dry holes. Three facts stand out quite prominently in the records of the borings on Spring Creek:

1st. The area of the oil was very limited.

2d. All the oil was obtained from the crevices or cavities of a hard silicious rock 112 to 155 feet above the black shale.

3d. The subterranean crevices or caverns had for the most part no connection with one another, but were distinct, each one holding its treasured supply of oil, and oftentimes occurring one immediately above the other.

Passing now in a northerly direction through Livingston and beyond some 10 miles, on the waters of West Fork, we enter upon an oil region only known by its wastage. The West Fork hews its way down through the St. Louis limestones, Waverly sandstones and Keokuk shales. The bluffs rise, for the most part, abruptly from the water's edge, with occasionally narrow strips of bottom land. The stream is one of great rapidity.

Koger's farm, upon which the oil indications are most numerous, is within 4 miles of the mouth of West Fork. The bluffs on the river show a succession of wrinkles, and the limestones are soft and much eroded by atmospherical and pluvial agencies. At places they are vesicular and cavernous. The hills are oftentimes sloping and covered by a coating of unctious clay.

There is a small bottom about 115 feet wide, running up and down West Fork. The sands of this bottom are thoroughly saturated with oil. By sinking a hole anywhere in this small strip, or in the bed of the stream, petroleum rises to the surface in brownish or bluish disks, which float away on the surface of the stream. The bluish disks are beautiful in their irridescence, displaying in the light all the colors of the rainbow. At this place many gallons may be collected in a day. The oil-saturated sand extends for the distance of 100 yards or more.

Still lower down the stream, and one mile above its union with East Fork, the mass of slimy mud on the side of the stream is thoroughly saturated with petroleum. By pushing a stick down in this mud, gas and petroleum ascend to the surface from the spongy mass. The very atmosphere at this place is redolent of petroleum, and one can scarcely touch the earth for a space of several hundred feet without having his olfactories offended by the odor of the oil. The formations here agree precisely with those at the Koger farm. The Waverly sandstone appears on the hights above in some greater thickness, and one layer of sandstone a foot thick is found interstratified with the Keokuk slates, which here take the place of the silicious rocks.

Franklin Creek is in Fentress county, and runs west, emptying into Obeys River. It is about three miles long. One mile above its mouth there is a gravelly bar which is steeped and saturated in petroleum. The bubbles look as though they had been immersed or boiled in petroleum. The oil is above the black shale.

At one place only is it found in the black shale, and that is on Trammells Creek in Sumner county. Here oil was found at the distance of 30 feet in the black shale. It was a very heavy lubricating oil.

In Dickson county, West of Nashville, oil is found in Nashville rocks at the depth of 542 feet. The following conclusions may be deduced from the facts presented:

1. That petroleum in Tennessee is not confined to any particular formation, but finds its storage in the crevices of the silicious rocks of the lower carboniferous, as on Spring Creek; in the Nashville rocks, as on Eagle Creek; at Butlers' Landing, and in Dickson county west of Nashville. The springs or natural outlets show a similar range of formations. At Spring Creek oil exudes from the alluvial deposits lying above the lower member of the silicious group; on Koger's farm, on West Fork, from alluvium based upon layers of shaly limestone; on Eagle Creek and Franklin Creek, from fluviatile deposits resting on the black shale; on Obeys River, just below the mouth of Franklin Creek, from beneath the black shale, and at numerous places from this point down to the mouth of the river, oil bubbles up from the Nashville rocks.

2. The conditions of storage in the Tennessee oil region are not so favorable for the preservation of petroleum as they are in the oil region of Pennsylvania. In Tennessee the oil finds a lodgment only in the crevices of rocks lying above or below the black shale, rarely in the black shale. The wells will probably soon be exhausted. There is wanting a porous, absorptive sandstone surrounded by an impervious formation to prevent leakage. The unusual number of oil springs shows that nature has not provided sufficient storage for her precious products. The remains of organic life, animal and vegetable, disseminated through argillaceous material, constitute in abundance the elements necessary for generating petroleum, but the provisions to prevent wastage are inadequate.

Owing to the absence of porous sandstone, the oil supply in Tennessee, as has been stated, is collected in fissures or cavites, forming subterranean oil lakes which are soon emptied. There will probably be proportionably more wells known as "spouters" in the Tennessee than in the Pennsylvania oil region, and fewer durable wells. In the "spouters" the oil is forced up above the surface by gas pressure.

Three conditions are necessary antecedents to a productive oil region.

1. There must be the elements for generating oil, or, in other words, a mother rock.

2. There must be an ample storehouse provided, either in the interstices of a porous sandstone, which is best, or in cavities in limestone or fissures in or between other strata.

3. These storehouses must be sealed up in an impervious formation, but this impervious surrounding must include both the mother or generating rock and the storage rocks, and not come between them.

Petroleum may be generated and lost for want of a suitable reservoir to collect and preserve it; or there may be a reservoir but no elements existing for its generation; or there may be both of these, but the want of an impervious surrounding may permit the oil to dribble away as fast as formed.

All these conditions must coexist or a productive oil field is impossible.

The most difficult problem to solve is how the oil is generated, or from whence it comes, that is found in the cavities of a hard, impervious, flinty rock which shows no remains of organic life. But one solution presents itself to my mind, that the places now occupied by these cavities may have been filled with organic matter which has been transmuted into petroleum in nature's lampless laboratory.

United States Minister Pierrepont, and the Earl of Derby, Secretary of State for the Foreign Department, have signed a treaty between the United States and Great Britain regarding trade-marks and trade-labels. The treaty was sent to America on the 25th ult.

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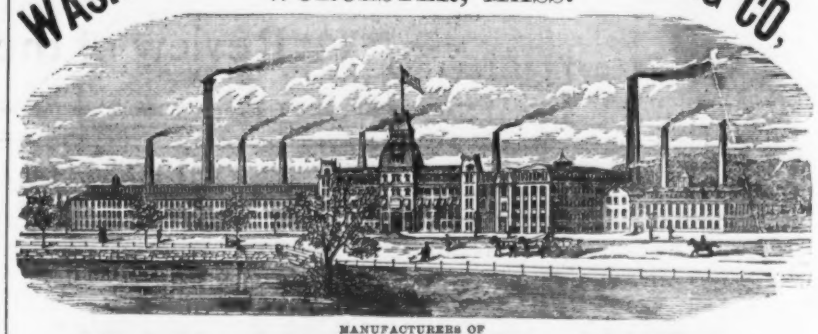

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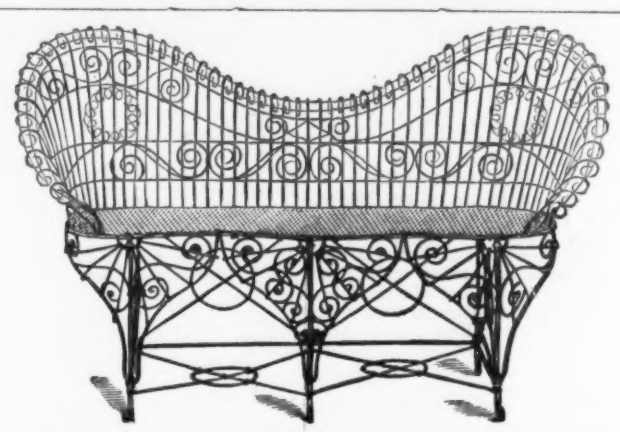

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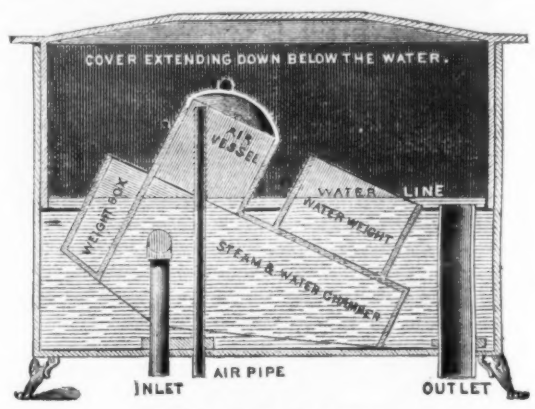
Messrs. Lovegrove & Co., 125 North Fourth street, Philadelphia, are manufacturing a novelty in the shape of a device which they call the "Hydro-Lever Steam Trap." This trap can be arranged not only to trap the steam, but to separate hot water of different temperatures. The cut represents a sectional view of the apparatus. It is provided with a vessel in which the air is collected and discharged at once. The water weight upon the lever does not prevent the closing of the valve, while it aids in opening it should it be opened too much. A steam or vapor chamber is provided which gives the power for operating the trap. A weight box is shown in the drawing in which a proper amount of shot may be placed until the adjustment is effected. The cover of the trap is put on without a joint, the flange of the cover extending down below the water line; hence it is not necessary to "make a joint," and the cover may be lifted off at any time, even when the trap is in operation. No bolts or nuts are used in the construction. These traps can be used in connection with heating apparatus, vacuum pans, sugar refiners, beer kettles and in any situation where a steam trap is needed.



HYDRO-LEVER STEAM TRAP.

Labor Schools in Europe.

A remarkable report has lately been published by the University of Cambridge, England, on the subject of industrial education. Premising that since workingmen cannot come to the university, it is the university's duty to go to them, it proposes to open a course of specific training, not for the so-called liberal professions, or for middlemen of any kind, but for the veritable producers—in other words, for the working class. This design is worthy of an institution which, since the days of the Long Parliament, has been outspoken in the expression of popular sympathies and steadfast in promoting reform.

Since the decay of the old apprentice system, very little has been done for the education of labor. It is plain that the establishments known under the name of ragged schools scarcely belong to the class of industrial seminaries. As their title indicates, these institutions receive the children of poor parents, or orphans, afford them lodging and nourishment, and employ them in various trades. The extreme youth of these children—they graduate, as a rule, at the age of 15—prevents them from receiving a substantial technical training. On the other hand, considerable progress has been made in this direction by certain countries on the Continent, and some examples specially worthy of imitation are pointed out in this report.

Industrial schools seem to be quite numerous in the German empire and Austria, in Denmark, Sweden, Holland and Belgium. They are generally known as "apprentices' workshops," but they combine theoretical with practical instruction, and presuppose graduation from primary schools. In Belgium, pupils are admitted from the age of 12, or even earlier, if they can show the requisite measure of elementary knowledge. The articles made in the shops are sold for the account of those who furnish the raw material, and the latter are indemnified for damage occasioned by unpracticed hands. A point to be noted in the Belgian system is the payment to the pupils of a small stipend, by way of compensation to straightened families dependent to some extent on the earnings of their younger members.

In Holland, the most important technical academies for producers are those of Amsterdam. The school for boys, founded in 1861 by the "Society of the Working Classes," is designed to train workmen for those trades which are connected with architecture and ship building. The course of instruction lasts three years, and includes—besides certain studies supplementary of primary acquirements—the elements of metrics, of machanics and natural history, the art of drawing, the study of tools and materials, carpentery, masonry, the use of the lathe and the forge. The pupils must be at least 13 years of age, and have received a good elementary education. They are required to pay an annual fee which does not exceed, however, $13. There is likewise a training school for girls in Amsterdam, whose management has been attended with good results, because it has avoided the common error of wasting time on lady-like accomplishments. Special attention is paid to the commercial applications of the art of design to dressmaking, tailoring, and lace making, and to those branches of knowledge requisite for the preparation and vending of drugs. Girls are admissible to this institution at the age of 12 and pay a fee of $21.

In Scandinavia and the German empire, the apprentice schools differ only in some details of small importance from those above described. We merely note that they are government institutions, whereas in Vienna, Prague, and throughout Austria the industrial academies were created by private enterprise, although they receive a subsidy from the State. Passing to other countries, we find the idea of technical training for the working classes has borne but meager fruit in Switzerland, although the system of rudimentary instruction is singularly efficient. There exists, it is true, what is known as an Industrial School, where a pupil gains some acquaintance with the theory of the applied sciences, but very little help toward the practical mastery of a given craft or calling. In Italy, too, not much has been accomplished for the professional education of those producers who form the mass of its population.

Notwithstanding many projects brought forward at the epochs of its various revolutions, France, as a nation, has done almost nothing in the way of providing a substitute for the old system of apprenticeship which passed away with the *ancien regime*. She seems to have taken thought for everything except skilled labor. Her unrivaled assemblage of art, scientific and professional schools, is supplemented by a score of special institutions whose graduates are qualified to direct every species of industrial and agricultural enterprise, and by a number of business colleges framed on the model of the *Ecole Turgot*, whose pupils are fitted for the several branches of foreign and domestic trade. But of schools for workmen the State has none, if we except the establishment founded by the Sardinian government and transferred to France upon the annexation of Savoy and Nice. It is true that a few municipalities have created apprentice schools, but their number is extremely limited. Paris has only one institution of the kind—the apprentice school of the Boulevard de la Villette. This, however, merits special attention, because, according to Prof. Stuart of Cambridge University, it presents the most perfect type of an industrial academy. We may add that at his suggestion a fac-simile of it is about to be organized in England.

The single object of this school, first opened in 1873, is to produce intelligent and skillful workmen. The specific callings for which its pupils are trained are those of workers in iron and workers in wood. Boys are admitted between the ages of 13 and 16, after an examination which has regard to orthography, arithmetic and the metric system. Not only is tuition gratuitous, but deserving students receive once a fortnight a certain compensation for their labor, varying from 40 cents to a dollar. The period of apprenticeship is three years. During the first two years a day's labor includes 6 hours in the workshop and 5 in the class, while for the last year it means 8 hours of practice with tools and 3 hours of study. Among other judicious features of the plan, we may note that during the first twelvemonth the pupil passes one or two months alternately in each of the specialties taught, so that he can determine which suits his taste, while the directors can observe his aptitude. Only at the beginning of the second year does the apprentice, with the advice of his parents and teachers, decide upon a given trade, to which thenceforward he devotes himself exclusively.

The creation of this school would have been impracticable during the second empire, and under the existing *regime* it has encountered many obstacles. Yet its progress has been remarkable. The number of apprentices, which four years ago was 17, is now nearly 200. But it was the quality of the education conferred which most impressed Prof. Stuart. Two things commonly supposed to be irreconcilable in practice had been effected. In the class which had just completed a three years' course he found each graduate, in the most exacting sense, a skilled workman. Not only this, but he found these apprentices had acquired an amount of general knowledge at least equal to that bestowed by most business colleges, and of a kind far more pertinent to the affairs of life than that demanded by a degree of Bachelor of Arts. In other words, the young workman had gone forth from this admirable school at once a producer and a citizen.

Ironclads should be handled about as carefully as glass when the mercury is many degrees below zero. The Russian government is bemoaning the folly of the Grand Duke Constantine in not realizing the effect that would probably result from the vibrations of cannon firing on board of a monitor when the iron composing the hull and machinery was under the influence of a severe frost. Last winter, when the Baltic was frozen over, and solid ice kept the Russian fleet still and motionless within the harbor at Cronstadt, the Grand Duke, fearing the crew of the ironclad Peter the Great would be unprepared for any emergency which might occur in the spring, issued orders for the officers and men to pass through a series of gun drill. Three out of the four 35-ton guns belonging to the monitor had been dispatched to the Black Sea for the defense of Odessa, so that the practice could only be carried on with one. The result of the firing has been made apparent in the discovery of the porosity of the hull, the cracking of cylinders and the fracturing of other portions of the machinery. A committee of naval experts examined the boat and experienced no difficulty in arriving at the cause of its terribly damaged state. There was an Arctic temperature of 40 and even 50 deg. below zero at Cronstadt very frequently last winter.

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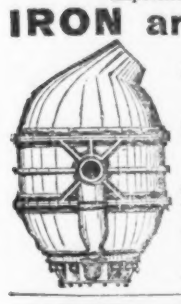
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New Patents.

We take from the records of the Patent Office in Washington the following specifications of certain patents, lately issued, which will be found interesting:

IMPROVEMENT IN THE MANUFACTURE OF IRON AND STEEL.

Specification forming part of Letters Patent No. 174,682, issued to James J. Johnston, of Columbiana, Ohio.

This invention consists in purifying molten cast iron by allowing it to flow in a series of fine streams into a liquid solution, consisting of water in which is dissolved the nitrate of soda, to which is added pulverized oxide of iron or other metallic oxide as detersive and oxidizing agents, and subsequently subjecting the iron thus purified and refined to heat, after which it is formed into balls and then subjected to the squeezing, rolling, or hammering process.

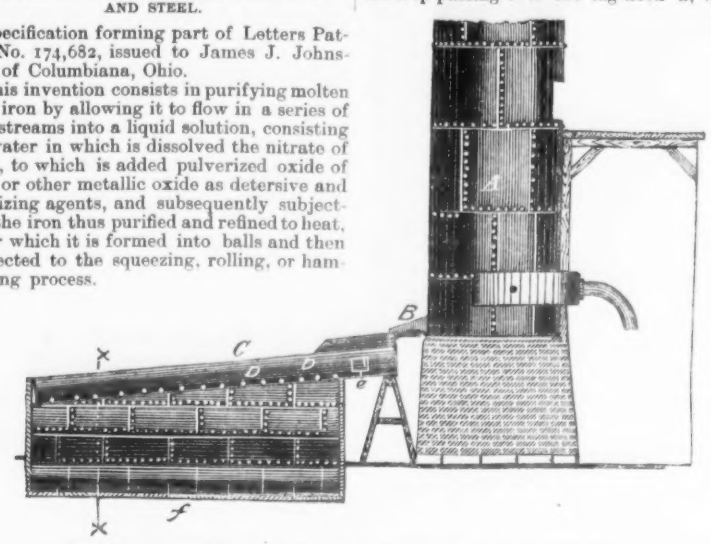


Fig. 1.—IMPROVEMENT IN THE MANUFACTURE OF IRON AND STEEL.

In the accompanying drawings Figure 1 represents a side elevation of a cupola or smelting furnace, and a section of a reservoir for the purifying, refining, oxidizing and detersive solution, said reservoir being provided with a trough furnished with a series of apertures, said trough and reservoir being arranged in juxtaposition with relation to the spout of a cupola or smelting furnace. Fig. 2 is a vertical and longitudinal section of the heating furnace.

A represents a cupola or smelting furnace, and B its spout. C represents the trough leading from the spout over the reservoir *f*, and is provided with a large number of small apertures, D. In the end of the trough C, next to the spout of the cupola or smelting furnace, is arranged an abutment, *e*. The interior of the trough C is lined with loam clay, which is coated with pulverized iron ore. Having the trough thus coated and thoroughly dried, it is arranged over the reservoir, and the reservoir arranged with relation to the cupola or furnace as represented in Fig. 1. Then dissolve, in sufficient water to fill the reservoir, nitrate of soda, adding about 1 pound of soda to every 5 gallons of water, and then adding to this solution finely pulverized oxide of iron (iron ore), adding about 2 pounds of it to every 5 gallons of the aforesaid solution. Then tap the cupola or furnace and allow the molten metal to flow into the trough C. The molten metal, striking against the abutment *e*, will spread over the bottom of the trough, and will pass through the apertures D in a series of fine streams, and, falling into the solution, will be purified, refined and granulated, care being taken to thoroughly stir and agitate the solution during the time the molten metal is

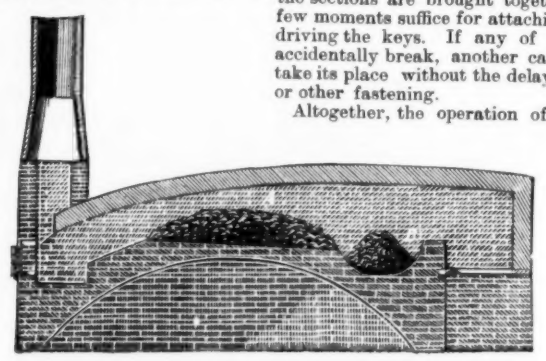


Fig. 2.

flowing into it. The purified, refined and granulated metal is then removed from the reservoir and placed on the hearth A' of the furnace, represented in Fig. 2, where it is subjected to heat, bringing it to a friable condition, after which it is gradually worked down into chamber B of the said furnace, where it is formed into balls, which are withdrawn from the furnace and subjected to the squeezing, rolling or hammering process, for the purpose of forming blooms or "muck bar," which are afterward treated and manipulated in the usual manner and by the ordinary means, for the purpose of forming merchantable iron.

Claim.—1. The process of manufacturing iron and steel, consisting in running the molten cast iron into a bath of water holding nitrate of soda in solution, and a metallic oxide in suspension, as detersive and converting agents.

2. The process of manufacturing steel, consisting in running the molten cast iron into a bath of water with nitrate of soda and a metallic oxide to granulate the iron, and then subjecting the iron so treated to heat while imbedded in charcoal.

IMPROVEMENT IN FASTENINGS FOR BESSEMER CONVERTER SECTIONS.

Specification forming part of Letters Patent No. 185,783, issued to William R. Jones, of Braddock's Field.

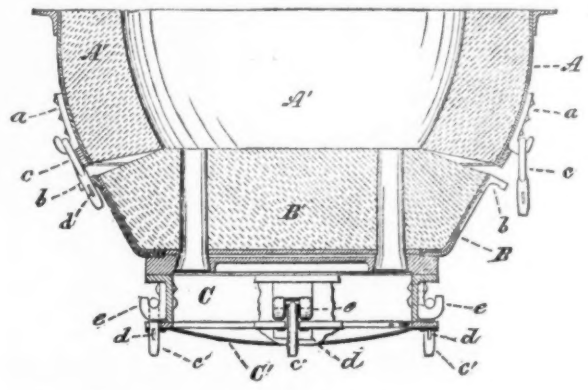
The invention relates to the construction of devices for readily uniting or displacing the bottom of Bessemer converters and the air chamber cover from the bottom, and consists of either a T or loop-headed bolt, the head seated on a lug or lugs on one section of the converter, and the shank passing through an open flange or lug on the other section, beyond which the usual key-wedge is driven through the bolt shank.

In the drawing A is the shell of the main section of the bulb, A' its lining. B is the shell of bottom section, and B' its lining, having the tuyere holes for the blast. C is the air chamber casing, and C' its cover.

On the outside of shell A, around its lower edge, are placed lugs *a*, each having an upwardly turned end, forming a hook, On the outside of shell B, around its upper edge, and corresponding to the lugs *a*, are placed lugs *b*, each having a square shoulder with an open slot. The under side of the shoulder may have a groove as a seat for the key wedge. These two portions are united by means of the loop-headed bolts *c*, the loop passing over the lug-hook *a*, while the shank slips into the open slot of lug *b*, after which the key *d* is driven home.

The cover C' of the air chamber is clamped in a similar manner, except that the bolts *c* are T-headed, and the lugs *e* are slotted to form a seat for the shank, and a bearing on each side for the T-head. In other respects the two fastenings are alike.

Thus constructed, in assembling and uniting the parts there is no necessity for such nicety of adjustment before lowering away



IMPROVEMENT IN FASTENINGS FOR BESSEMER CONVERTER SECTIONS.

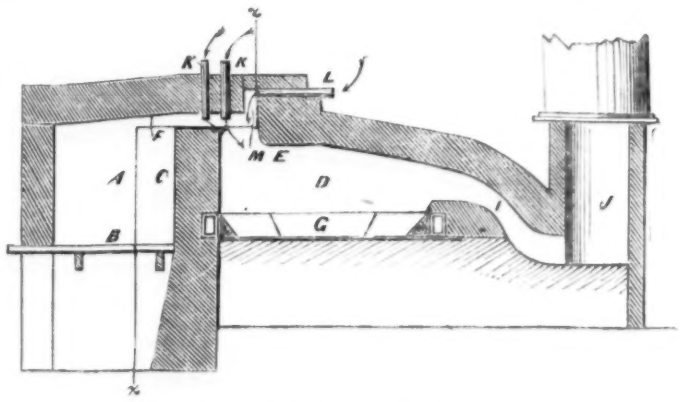
at the crane, and no possibility of breakage. If a bolt fail to enter its slot, it is simply pushed out of its seat. Or the bolts may all be unshipped and thrown on the ground till the sections are brought together, when a few moments suffice for attaching them and driving the keys. If any of them should accidentally break, another can be had to take its place without the delay of riveting or other fastening.

Altogether, the operation of uniting the sections by this means is rendered short and simple, with no loss of time, no breakage, no necessity of lengthy repairs, as are usual with the present form. The time thus saved can be profitably occupied in one or more extra "blows" daily.

Claim.—A coupling for the sections of a converter, consisting of a bolt, having a loop or T-head, a hooked lug, to support said bolt, an open slotted shoulder to receive the bolt shank, and a key to fasten the coupled parts together.

IMPROVEMENT IN METALLURGIC FURNACES.

Specification forming part of Letters Patent No. 178,411, issued to Alfred F. Cassel, of Zanesville, Ohio.



IMPROVEMENT IN METALLURGIC FURNACES.

The cut represents a vertical longitudinal section of a furnace adapted for puddling.

A fire chamber, A, having a roof higher than usual, is provided with a grate, B, to support the fuel, and a door as usual. The bridge wall C, between the fire chamber and furnace chamber D, or furnace proper, extends higher than usual, as shown by the drawings, its top extending fully to a level with, and, preferably, above, the under side of the roof or crown E of the furnace, while the roof F of the fire chamber is raised above that of the furnace chamber, its under or inner surface being, by preference, about on a level with the top or outside of the roof of the furnace. A low passage-way, for the gases and other products of combustion, communicating between the two chambers, is thus formed between the top of the elevated bridge wall and the bottom or under side of the fire chamber roof, above the level of the bottom or under side of the roof of the furnace chamber, thus confining the products of combustion within narrow limits on their way from the fire chamber to the furnace chamber, and insuring the thorough commingling with them of the air passing in by the pipes. The furnace may be provided either with a puddling chamber, G, or a bottom for heating the iron for working, or it may be constructed as a smelting or boiling furnace. The chamber terminates, as usual, by a neck, I, in a stack, J. To insure the complete combustion of its gases and other unconsumed inflammable products which ascend from the fuel to the top of the elevated bridge wall C, air pipes, K, are inserted through the roof of the fire chamber over the bridge, or in front of it, (the front referring to that side next the furnace chamber), or both over and in front of it, as shown, while horizontal pipes, L, enter through the roof of the furnace into a space or chamber, M.

Instead of pipes, perforated tiles or channels formed in the roof would answer.

The air supply pipes are shown as arranged at right angles to each other; but it is obvious that, instead of being so arranged, and entering vertically and horizontally, they may be inclined somewhat, and their angle to one another varied from that shown in the drawings.

From the foregoing description it will be seen that as the gases and other products of combustion pass from the fire chamber and over the bridge, they are forced to take a downward course on their way to the stack to escape, and draw in air to support and complete combustion, with the beneficial effects which are well known in furnaces of this class. By the construction and relative arrangement of the bridge, the fire chamber roof, and the furnace roof, with the air chamber formed between the two roofs, the air is forcibly drawn in through the pipes or openings for its admission and carried downward with the draft, to thoroughly mingle with the inflammable gases, &c.

Should the heat become too intense, caps, placed over some or all of the pipes, shut off the air, and reduce the heat in the furnace chamber, the heat of which may thus be regulated at will. Valves might also be used for this purpose.

Claim.—1. The combination, with induct pipes, of the transverse air chamber, into which they discharge, situated above and in front of the fire bridge, and at the juncture of the fire and furnace chamber roofs.

2. The metallurgic furnace, constructed as hereinbefore described, with short vertical pipes entering through the fire chamber roof to the narrow draft passage above the fire bridge, a transverse air chamber in front of said bridge, above and communicating directly with said draft passage, and short horizontal pipes entering through the furnace chamber roof to said air chamber.

The Proper Speed for Circular Saws.—The *Lumberman's Gazette* says: Nine thousand feet per minute—that is, nearly two miles per minute for the rim of a circular saw to travel may be laid down as a rule. For example: A saw 12 inches in diameter, 3 feet around the rim, 3000 revolutions; 24 inches in diameter, or 6 feet around the rim, 1500 revolutions; 3 feet in diameter, or 9 feet around the rim, 1000 revolutions; 4 feet in diameter, or 12 feet around the rim, 750 revolutions; 5 feet in diameter, or 15 feet around the rim, 600 revolutions. The rim of the saw will run a little faster than this reckoning, on account of the circumference being more than three times as large as the diameter. Shingle and some other saws, either riveted to a cast iron collar or very thick at the center and thin at the rim, may be run with safety at a greater speed.

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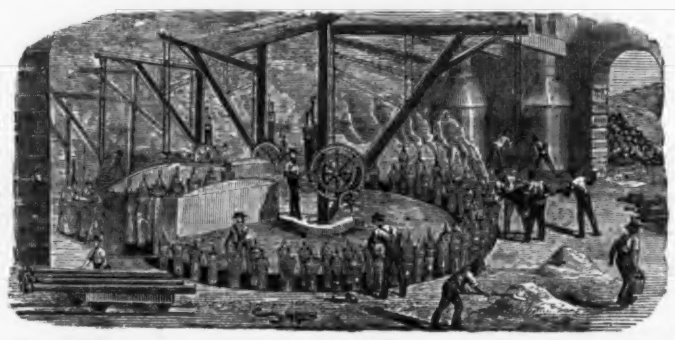

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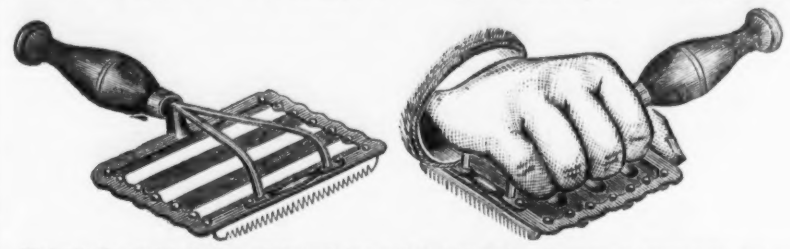

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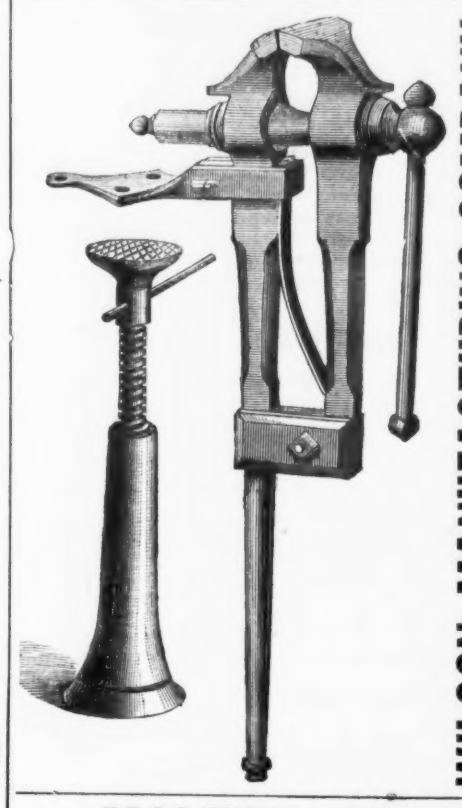

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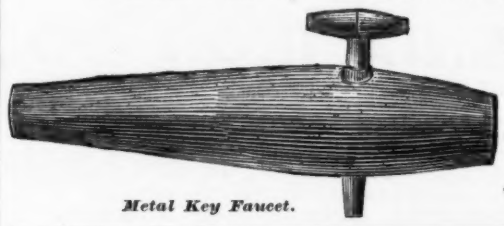

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Machinery in Its Relations to Artistic Productions.

The following is an abstract of a lecture before the Sheffield School of Art, by Mr. Wm. Bragge, F. S. A.:

Last year Mr. Poynter, the president of the Art section of the Social Science Congress, held at Liverpool, in his address to the congress objected to the "Castellani" collection of Italian jewelry being sent to Birmingham on loan, because cheap and inferior copies would there be made mechanically, and in this objection Mr. Poynter embodied and expressed a very common idea—that mechanical work cannot be artistic work.

How far this is true I shall endeavor briefly to show, and I may at once state that I shall claim for all mechanical appliances the right and privilege of assisting in our art manufactures. I am prepared at once to admit that the enormous industrial progress of this country during the present century has really done very little for art. Our manufacturers have, almost to the present time, given their whole attention to economy and rapidity of production, and the public taste has not been elevated by the style of the articles produced. But allowing that in past and even at the present time, the taste and skill of the artist have been lost—sacrificed to the ingenuity and contrivances of the mechanician—we surely need not conclude that art cannot become an ordinary adjunct to mechanical reproduction. We know well that in many manufactures carried on by us to-day our best models in design, as well as in material, are those bequeathed to us by workers who lived centuries ago, whose mechanical appliances were of the simplest and rudest character; and it is with some sense of humiliation that we are bound to confess ourselves unable to equal not merely the works of three or four centuries ago of European civilization, but even of those of the present day, produced by nations which we are conceited enough to call savage. Let us take a few examples of the arts and manufactures of old time and compare them with those of the present day. Have we improved in the art of printing since its invention, 400 years ago? or in the art of paper-making of 600 years ago? In quality, certainly not. We are bound to remember that to-day an ordinary edition of a newspaper is printed on both sides in quantity sufficient to cover an acre in the same or less time than Caxton or Guttenberg required for the production of a single sheet. We produce paper now in continuous rolls of many hundreds of yards in length, and with a rapidity commensurate with the voracious requirements of the steam printing press; but no paper now in general use (excepting bank-note paper) equals in quality that upon which our early books are printed. Most of the books printed of late are, I think, likely to be entirely lost within a century, simply from the natural decay of the (so-called) paper upon which they are printed. But we can to-day buy a newspaper for a penny or a book for a shilling which in Caxton's time would have cost 50 or 100 times as much. We can and do engrave dies and coin money for all the world, but we cannot produce anything comparable with the exquisite coins of ancient Greece. We can imitate in a feeble way the cameos and intaglios of the stone engravers of ancient Rome, but this is an art almost unpracticed among us, and so far as we are concerned artistically, it is practically lost. In ornamental enamel we must go to China and Japan for our models, as Messrs. Elkington have wisely done, and then find out by painful experience how best to copy the humbler objects before daring to imitate the more important. Our English enameling of to-day is confined pretty closely to the decoration of mayor's chains, masonic emblems and the lining of iron pots and pans. The art of lace-making or ornamental needlework—in mediæval times one of the most general occupations of women of every rank above the lowest—is now almost entirely lost, and we must go to our museums to see the charming examples of taste in design and perfection in work which still remain for us to admire. The hand-made lace will bear microscopic examination; it consumed much time and patience in its production, and was consequently very costly. Nowadays one can buy in Nottingham embroidered curtains enough to furnish a house for less money than a collar of ancient point lace would cost. I might indefinitely prolong this list, and point out to you the comparatively lost arts of damasquining, or inlaying iron or steel with the precious metals; of the special forging of sword blades in Damascus and Toledo to produce the twist in the fiber, so to speak, of the metal; of the remarkable skill in perforating steel and brass as a decoration of useful objects practiced in Persia; of the marvels of design, color and glaze of early Italian pottery or majolica; of the exquisite glass and mosaics of Venice; the gold and silversmith's work of Italy; the shawls of Cashmere and textile fabrics generally of India; but further instances are not needed, and you will, I think, agree with that which is a commonly accepted opinion, that in all these, and in many other artistic manufactures, we, the English, are now utterly unable to compete. I have not made in the foregoing remarks any reference to painting and sculpture, because those arts stand outside of the reach of mechanical appliances, and therefore the painter and sculptor of to-day are in this respect in the same position as were Apelles and Phidias, Titian and Michael Angelo. And now we may proceed to consider what is the real or supposed antagonism between art as developed in individual workmanship and as accomplished or assisted by mechanical appliances. If we fairly compare the art of, say, the goldsmith or silversmith of three centuries ago with the art of to-day, we find that the workman then lived and worked under influences and incitements which have long ceased to exist. The mediæval workman thought and cared only for the single object upon which he was employed. He threw his whole soul, his whole inventive faculty, his whole technical skill, into his darling work, and he knew that no meaner hand could rob him of the fruits of his patient labor and skill. He was not hurried with his work. He had no anxieties as to cost. His master, if he had one, was not perpetually crying out for the economies of labor and of material, no estimates had been given which could not be exceeded, and no arbitrary percentage of profit had been beforehand fixed. Is it extraordinary that under such favorable conditions the workman should produce his best? Certainly not, and we ought to be profoundly thankful that the results of such a state of things have been preserved to us for our special instruction. How does the working gold or silversmith of to-day stand in relation to his work as compared with his predecessor of three centuries ago? Truly in a miserable plight! Instead of being himself the creator of the design he has to carry out, it has probably been prepared for him in an office where the commercial economy of manufacture is more considered than the principles of art, where facilities of production is held to be more important than elegance of form, and where the demands of the Demon of Fashion override the desires of good taste. All the patient labor of hammer and chisel, slowly and surely giving expression to the taste of the individual are dispensed with now, and are replaced with a few blows of the stamping machine! This stamping machine or press has taken the place of hand labor, and being only a machine, is perfectly indifferent whether the work it is called upon to do is in good or bad taste. It is as willing to work for the demon of ugliness as for the spirit of beauty, and the work which it produces is simply a reflex of the mind, and taste and quality of its employer. It is unfair to charge the mechanical appliances of manufacture with having caused a degradation of taste. The degraded taste existed when machines were first employed, and, unfortunately, the process of refining and improving the artistic feeling of the public has been hindered by the cheap and ugly mechanical productions. If the modeler will only produce molds worthy of admiration, the stamping press is at his command to bring under the daily notice of every one the forms of beauty which he has himself designed. We cannot, if we would, go back to mediæval habits of thought or modes of work, and those who to-day would abolish all mechanism in art manufacture would injure instead of helping their cause. The patience and skill of the modeler or chaser who wishes to devote months or years to the production of a masterpiece can still be given. He remains free to use his time and talents as he thinks best, and happily there is yet a demand for works of a high class in the production of which such men may be congenially employed. In this wealthy and art-loving country there is abundant occupation for the most skillful artists. Nothing that is really good fails to find a ready purchaser, and talent has to-day as fair a field before it as it ever had in days gone by. The gifts of corporate or public bodies to men who deserve honor; the production of prizes for excellence in exhibitions, for racing, or boating, or yachting; the demand of the wealthy for specialties designed for themselves, insure for the conscientious workman full scope for his talents. And I am sorry to be compelled to think that this special work is more than enough to occupy all the competent workmen who can be found. In the production of such works machinery and mechanical reproduction have no part; they stand as individual works, each wrought out by a master mind, to fulfill a single purpose, and to satisfy a personal want. But can the requirements of the million be dealt with in this aristocratic manner? Certainly not. For their wants every element of economy must be utilized; the means of production must be assisted by all the resources of mechanical science. The absolute perfection of detail must of necessity be given up, but there is no reason whatever why a high standard of excellence should not be preserved. Our jewelry, our gas-fittings, our table services, whether of silver, silver-plate, or other metals; our trays, coal-scuttles, fenders and grates, and everything else which forms a part of our domestic surrounding, may as cheaply be made elegant as ugly. The use of machinery has only to be wisely and thoughtfully adapted, governed by artistic principles, and its result will be to give to the world in its cheapest form the useful and the beautiful.

Large Sewer at Buffalo.—A very important and extensive piece of sewerage work—known as the Mill Race and Fillmore Parkway sewer—is now in process of construction in Buffalo, N. Y. Its total length is 11,143 feet, the whole number of acres drained at the outlet being 4562. The improvement is divided into six sections, the size of the first being 12 by 9 feet; the second, 10 by 6½; the third, 7½ by 5 and egg-shaped; the fourth, 7½ by 5, bench walls and arch; the fifth, 7 feet by 4 feet 8 inches, egg-shaped; and the sixth, 6 feet 3 inches by 4 feet 2 inches. Work was begun about the first of last month, and some 200 men are at present actively employed. A. H. Delameter, of Cleveland, Ohio, is the contractor for the work, his bid of $78,000 being the lowest of the four which were received, a year's time being allowed for its completion from the date of its commencement. The work is under the general supervision of City Engineer Geo. E. Mann, Assistant Engineer Edward B. Guthrie being directly in charge.

Pittsburgh Coal Trade in 1845.—The *Spirit of the Age*, of June 13, 1845, one of Pittsburgh's former publications, contained the following: "The coal business seems to be increasing. It has hitherto been a most important trade in this region; a great portion of the wealth of our city has been derived from it. The importance of the coal trade to Pittsburgh may be estimated by the following statement: A river friend of ours on a recent trip counted 191 loaded coal boats from Lock No. 1 to Greenfield. Each boat may contain on an average 6000 bushels of coal, which at 7 cents (the price paid in Cincinnati) will bring to Pittsburgh at least $80,000. This is a great income, considering the small amount of capital required in the trade. We are informed by a gentleman well acquainted with the iron business, that there are 26 furnaces now in progress of erection which will turn off on an average from 75 to 100 tons of iron per week for this market.

USE THE BEST.

Pawtucket, R. I.

The American File Company have the exclusive right to use the Bernot process for cutting files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing files and steel.

Goods of all known manufacturers have been repeatedly tested, and interesting tables have been compiled showing the working qualities of files made by different makers, and of files made from different steels, and with various shapes and angles of tooth. They have thus reduced the manufacture of files to an exactness and perfection with a uniformity of result, as they believe, never before attained. No file, foreign or domestic, that they have ever tested, has equalled the performances of their own goods taken at random from their stock. Their machines are capable of the most delicate adjustment, and can produce the very finest work known to the trade. Special files made to order. Prominent file manufacturers are having their best goods from our works.

Price lists and information furnished on application.

AMERICAN FILE CO., Pawtucket, R. I.

Granted for

After more than Fourteen Years of Competition

McCaffrey's Philadelphia Hand Cut Files and Rasps

Have Proved their Great Superiority.

Superior Goods.

Silver Medal.

Highest Premium.

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Sole Agents for Pacific Coast.

AUBURN FILE WORKS,

Superior Hand-Cut

FILES AND RASPS,

MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.

FULLER BROS., Sole Agents,

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ESTABLISHED 1848.

C. T. DRAPER & CO.
Sing Sing, N. Y.
Manufacturers of SUPERIOR
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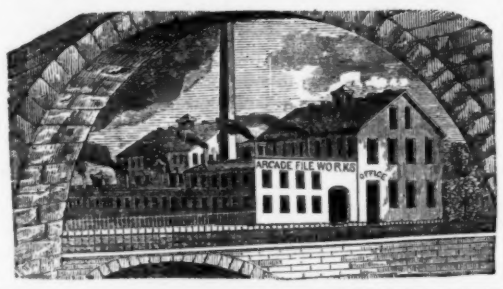
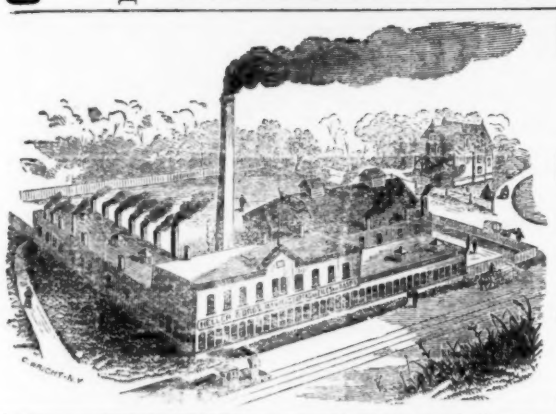


FILES and RASPS
Made from Best
ENGLISH CAST STEEL.
Quality guaranteed by written warranty when required.



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NEWARK, N. J.,

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FAMILY SAUSAGE STUFFER,

Lard, Fruit & Jelly Press.

Powerful, Durable and Convenient.

The Best Article of the kind in the Market.

No. A,	capacity	2	quarts, Japanned	$2.50
" B,	"	4	"	4.00
" AA,	"	2	" with inside of Cylinder Enameled	4.00
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Liberal discount to the trade.

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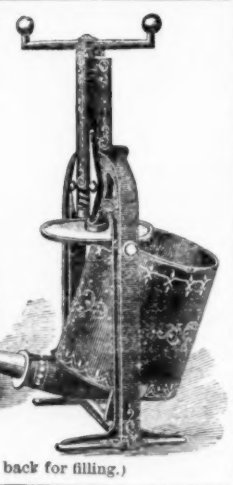

Fig. 2.

(Tipped back for filling.)

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Non-Extensible Razor Belt.

PATENTED JULY 25, 1871.

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In this Strap the liability of the leather to stretch and become loose and porous is prevented by the use of a patented non-extensible base, which supports the leather and secures

PERMANENT ELASTICITY.

We make this style with single rod, double rod, and wood frames, and intend that it shall, in quality compare favorably with our other well known brands.

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FILES & RASPS,

Best Cast Steel.

HAND-CUT. Manufactured by

JOHNSON & BRO.

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FORGED

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HORSE SHOE NAILS,

READY FOR DRIVING.

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SAW BLADES,

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B. F. Badger & Son, Wells Bros., B. L. Walker, J. H. Kramer & Co., &c., &c.

Send for prices and specialties.

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Solid Cast Steel Pump Augers

Solid Cast Steel Augers & Reamers

For Boring PUMP LOGS. All sizes in stock. **Socket Shanks, Ring Handles, and Connecting Rods** for the above to order. Also **Tenoning Tools** for joining log ends. **Coopers'** and **Slaters' Tools.** Tool Chests. Tools for all trades a specialty.

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Iron Pumps Reamed & Re-Chambered.

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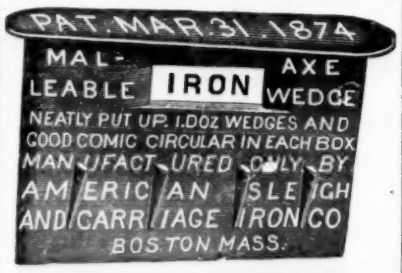

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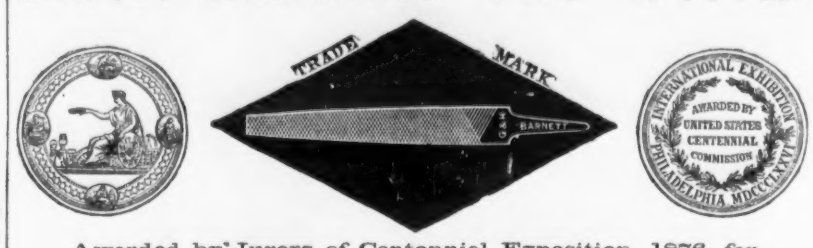

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SOLE AGENTS Thos. Turner & Co.'s, Files, Horse Rasps.
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All descriptions of Files made to order. Price List mailed on application. Established 1863.

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Patented in the United States, Canada, England, Belgium, &c., &c.

The constantly increasing demand for these Nails has compelled the erection of additional buildings and machinery, which more than trebles the production of last year. With increased facilities, all orders can now be filled promptly.

The plate being fed into the machines by an automatic attachment, sharp corners are given on opposite sides, which allows the Nails to cut the grain of the wood off clean, thus bracing the thread against the two rough, square sides. This gives **a holding power from 20 to 40 per cent. greater than the ordinary Nail.** Send for special quotations to sole proprietors of the patent.

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MANUFACTURERS OF

Sheet, Plate, Hoop, Bar Iron, Hot Pressed Nuts and Nails.

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O. P. COBB, President. H. S. CAMPBELL, Secretary.

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Wire Nails

With Flat, Round, Oval, Depressed, Screw and Fancy Heads.

Moulding and Finishing Nails, with or without heads. **Brush Makers', Upholsterers', Cigar Box, Basket, Chair and Undertakers' Finishing Nails** a specialty. **Shoe Nails of Brass and Iron. Bright Iron Rivets. Brass and Iron Escutcheon Pins,** with flat, round and fancy heads, all sizes on hand and to order.

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The Cowles Hardware Co.,

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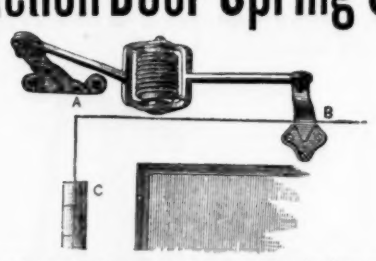
Manufacturers of

CEER'S PATENT

Reverse Action Door Spring & Retainer



On an entirely new principle, distinct from all others. Holds the door open as well as shut. Shuts the door firmly at the closing point. One of the most simple applications of the toggle joint and coil spring combined, having an advantage of closing the door firmly and of retaining the door open, back of a right angle. Also will retain the door at a right angle without the aid of any catch.

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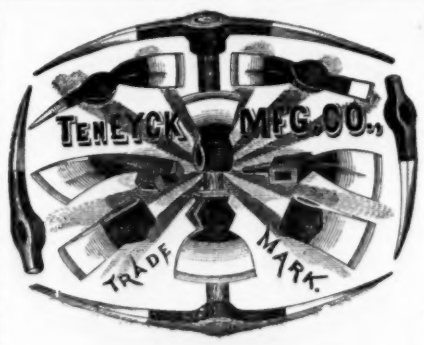

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AXES

Of all kinds.

Hatchets, Adzes, Grub Hoes, Mattocks and Picks.

Catalogues and Price Lists furnished upon application.

Cold-Punched vs. Hot-Pressed Nuts.

Results of a Series of Tests of Cold-Punched and Hot-Pressed Nuts at the Mechanical Laboratory, Stevens Institute of Technology, Hoboken, N. J.

BY PROF. R. H. THURSTON, DIRECTOR.

MECHANICAL LABORATORY, DEPT. OF ENGINEERING, STEVENS INSTITUTE OF TECHNOLOGY, HOBOKEN, N. J., Aug. 21, 1877.

The following are the results of a determination in the Mechanical Laboratory at the Stevens Institute of Technology, of the resistance to stripping and to bursting of several sets of hot-pressed and of cold-punched nuts. They were of four sizes, viz.: ½ in., ⅝ in., ¾ in. and ⅞ in. The hot-pressed nuts were made by J. H. Sternbergh, of Reading, Pa., and the co'd-punched by Messrs. Hoopes & Townsend, of Philadelphia.

The conditions of the trial were:

1. that all the nuts to be tested be suitably marked and a record kept of number and marks of each sort.

2. that those for tapping be examined, to see that the sizes of holes are exactly alike and are the same sizes as agreed upon, viz.: Franklin Institute standard.

3. that all nuts of a given size, which are to be tested by stripping the threads, be tapped with the taps furnished by Messrs. William Sellers & Co.

4. Directions for the tests of the stripping of the threads of the nuts: Take 120 rods as follows: 30 of each ½ in., ⅝ in., ¾ in. and ⅞ in., full diameter, all to be 13 in. long; cut threads on each end one inch, first, however, turning down the fullness of the bar to exact diameter a distance of two inches on each end. These rods to be made of the best chrome steel, and nuts to fit closely as possible. The makers of the taps to furnish the rods, provided we have not the facilities for doing so.

5. that the tapped nuts to be used on rods in preceding clause are to be trued up accurately on the side on which the punch entered the nut.

½ in. nuts turned down to				5-16	in. thick.
⅝	"	"	"	⅜	"
¾	"	"	"	7-16	"
⅞	"	"	"	½	"

6. That a cold and hot punched nut be placed on opposite ends of the same rod, with their finished sides facing each other, and submitted to a pulling strain in the testing machine with such clamps holding each nut as will secure a uniform strain on the surface of each nut equidistant from the center of the bolt; that the nut so arranged be drawn asunder, until the rods break or the thread in one or both of the nuts gives way. If the rod breaks before the nuts strip, then, in subseqent tests, the nuts are to be turned down on the side mentioned until they are thin enough to strip their threads without breaking the rod. Should one nut only strip the thread, then the remaining nut to be subjected to a strain by clamping the shank of the rod and pulling on the remaining nut until it strips or breaks the rod.

7. That a record be kept of the stripping, breaking or bursting strain in all cases.

8. No rod or nut to be used a second time, except as stated in paragraph 6.

9. In all cases the nuts are to be pulled in the direction in which they are punched, or *vice versa*, only both alike.

10. A second test is to burst the blank nuts asunder by forcing them on a round conical mandrel until they burst quite open; a record to be kept of the strain required to force the nut on the mandrel and the distance it travels from the point where the nut is first tight until it is found to be burst open.

11. The mandrels to be used for the tests in paragraph 10 are to be made of cast steel, made large enough to enter hole of nut. The conical part to increase in diameter about 3-16 inch in 6 inches. The taper part to be polished smooth and oiled and wiped clean before each test.

12. The diameter of holes, thickness and outside short diameters of the nuts to be drifted, to be exactly the same.

13. The three qualities of nuts made by each contestant to be tested in this manner by bursting both blank and tapped, say 12 of each, or a total of 72 blank and 72 tapped, making 144 in all.

Of each size six sets of nuts were tested, viz.:

Hot pressed nuts, made expressly for the trial by J. H. Sternbergh from iron furnished by him. Hot-pressed nuts, made expressly for the trial by J. H. Sternbergh from iron furnished by Hoopes & Townsend. Cold-punched nuts, made expressly for the trial by Hoopes & Townsend from iron furnished by them. Cold-punched nuts, made expressly for the trial by Hoopes & Townsend from iron furnished by J. H. Sternbergh. Hot-pressed nuts, chosen at random from stock of J. H. Sternbergh. Cold-punched nuts, chosen at random from stock of Hoopes & Townsend.

These nuts were received here in the form of blanks and in the condition in which they were left after punching. They were all hexagonal, and of the following dimensions:

Distance between parallel sides	½ in.	⅝ in.	¾ in.	⅞ in.
	0.885	1.069	1.254	1.45
Diameter of hole	0.3986	0.505	0.6105	0.726
Diameter of hole after tapping	0.4056	0.5143	0.623	0.733

TRIAL BY STRIPPING STRESS.

The nuts for this test were taken at random from the lots received, and were carefully tapped with a set of taps of Franklin Institute standard, made to order for the Mechanical Laboratory by Messrs. William Sellers & Co.

The same set of taps were used for both the hot-pressed and the cold-punched nuts.

After tapping, the nuts were faced down to thicknesses which a preliminary series of experiments had shown to be, in each case, the thickness which would allow all the nuts to retain a resistance to stripping slightly less than the tensile resistance of the screwed rod on which they were placed when applying the load.

The following were the thicknesses:

For ½ in. bolt—	½ in.	thick.	
" ⅝ "	" —	⅝ "	"
" ¾ "	" — 5-16	"	"
" ⅞ "	" —13-32	"	"

The nuts were faced on the bottom side only, *i. e.*, upon the side at which the punch entered, upon mandrels received from the manufacturers. Except in facing and tapping, no change was made in the dimensions of any part of the nut. After facing, the nuts were carefully paired off upon screwed rods and tested in the manner described in Art. 6.

All the nuts were tested with their faced sides in contact with the sleeve of the testing machine.

TRIAL BY BURSTING STRESS.

The tapped nuts used in this test were tapped with those used in the trial by stripping.

The blank nuts were chosen at random from the lots received. The nuts were faced to the following thicknesses, which were, in each case, the greatest obtainable from the thinnest nuts received:

Thickness of Nuts Tested for Bursting Stress.

½ in.—0.44 in. thick.	¾ in.—0.72 in. thick.
⅝ in.—0.6 in. "	⅞ in.—0.72 in. "

It was expected to use a thickness for the ⅞ in. nuts proportional to the thickness of the other sizes, but in consequence of one of the hot-pressed ⅞ in. lots being unusually thin, the thickness of all was made 0.72.

As in the case of the stripping trial, the nuts were faced on the bottom side only, and, except in this respect and by tapping, were not changed in dimensions. The tests were made in a Riehle tension machine, in accordance with Art. 10 of the conditions of test.

The tests were conducted as follows: The mandrel was well coated with a lubricating compound of plumbago and grease, and the nut, with the faced side down, slipped on until it came to a bearing.

After rupture, the mandrel, with the nut undisturbed upon it, was removed from the machine, and the distance that it traveled was recorded.

DISCUSSIONS OF RESULTS OF TRIAL.

From an examination of tables it is seen:

1. Out of 180 nuts tested by stripping stress, only one hot-pressed nut broke under a greater load than the cold-punched tested on the same rod.

2. The average of the stripping or breaking resistance, and of the bursting resistance of any of the sets of cold-punched nuts, is greater than that of any of the classes of hot-pressed nuts of the same size.

3. In 9 out of the 12 lots tested by stripping, the minimum resistance of the cold-punched nuts exceeds the average resistance of the hot-pressed of the same size and class.

4. In 21 out of the 24 lots tested by bursting stress, the minimum resistance of the cold-punched nuts exceeds the average resistance of the hot-pressed nuts of the same size and class; but in one instance it is less than the average and minimum of every other set and size.

5. In 5 cases of stripping, the minimum resistance of the cold-punched exceeded, and in 2 equaled the maximum resistance of the hot-pressed of the same size and class.

6 In 11 cases of bursting, the minimum resistance of the cold-punched is greater than the maximum of the hot-pressed of the same size and class, but in one case the maximum resistance of the hot-pressed nut exceeded that of the cold-punched.

7. The amount by which the average resistance to stripping and to bursting of the cold-punched exceeded those of the hot-pressed varied irregularly with the size, but may be regarded as practically independent of the size for the range tested.

8. For the same material the amount of the excess of the average resistance to stripping of the cold-punched over that of the hot-pressed varies from 14.6 to 25.1, and averages 19.7 per cent. of the latter.

9. The amount of this excess for the bursting test varies from 6 to 75.7, and averages 51.9 per cent. of the resistance of the hot-pressed for the blanks, and from 10 to 41.6, with an average of 24.3 per cent. for the tapped.

10. With different irons the amount of the excess for stripping varies from 3.9 to 34.4, and averages 19.7 per cent. of the resistance of the hot-pressed nuts.

11. With different irons the amount of the excess for bursting varies from 3 to 65, and averages 43.4 per cent. for the blank, and from 2 to 33, with an average of 22.5 per cent. of the resistance of the hot-pressed for the tapped.

12. For the same iron, the blank cold-punched nuts have from 22.3 to 35.1 per cent. of the ductility of the blank hot-pressed, and the tapped cold-punched from 52.7 to 79.6 per cent. of that of the blank hot-pressed. With the different irons the ductility is from 22 to 35 per cent. greater in the blank hot-pressed, and from 54.3 to 74.5 per cent. in the case of the tapped.

The same marked difference in the ductility was noticeable in the manner in which the nuts ruptured, the hot-pressed in both the stripping and bursting tests yielding very gradually, rupturing noiselessly, and sometimes allowing the mandrel to be pulled quite through them without rupture ensuing. They were seldom more than cracked by the stripping stress, while the cold-punched nuts gave way in the bursting test with an audible sound, and in the stripping test they usually broke in two or more pieces with a loud report.

13. In five sets of nuts tested by stripping, the uniformity of strength shown by the cold-punched is greater than that exhibited by the hot; in four cases the hot-pressed exceeded, and the two styles are about equal in the remaining three classes.

In eleven classes tested by bursting the cold-punched excels in uniformity, in four the hot-pressed are ahead, and in nine there is no difference between the two styles.

The greatest difference of strength occurs more frequently with the hot than with the cold, but the greatest individual case of differences occurred with cold-punched nuts.

The difference in uniformity is therefore slightly in favor of the cold-punched nuts, but the difference between the two kinds in this regard is not a prominent one.

The results of the trial, taken as a whole, are conclusive in proving:

First, that the cold-punched nuts possessed a much greater average strength, combined with greater rigidity and slightly greater uniformity than were exhibited by the hot-pressed nuts, and that the superiority was most strongly manifested in the trials by stripping stress.

[*Continued on page* 11.]

[*Continued from page 9.*]

Cold-Punched vs. Hot-Pressed Nuts.

Second, that the cold-punched nuts exhibited a strength never attained by the hot-pressed nuts, but that such variations in the strength of both styles occurred as to have caused the hot-pressed nuts to equal, and occasionally to excel, in strength the weakest specimens of cold-punched nuts.

Referring to the differences in the character of the iron of which the nuts were made and their respective values as materials for either hot or cold treatment, I can say but little, as the evidence of the results of the tests are not of a completely decisive character.

The following table gives the results of calculations made upon resistances of these nuts to stripping or breaking in order to ascertain their resistance to stripping in pounds per square inch of the sheared section of their threads:

STRIPPING OR BREAKING RESISTANCE PER SQUARE INCH OF SHEARING AREA.

Material.			Cold punched.	Hot pressed.		
J. H. Sternbergh iron.	Maximum	lbs.	43,908	39,387		⅝ in.
	Minimum		39,387	39,322		
	Average		42,096	39,356		
Hoopes & Townsend iron.	Maximum	lbs.	46,159	45,711		⅝ in.
	Minimum		36,988	35,599		
	Average		43,139	39,722		
	Maximum	lbs.	45,937	41,238		¾ in.
	Minimum		25,544	29,345		
	Average		34,467	30,553		
Stock nuts.	Maximum	lbs.	43,956	36,776		¾ in.
	Minimum		33,561	31,282		
	Average		39,526	34,491		
	Maximum	lbs.	40,939	40,411		⅞ in.
	Minimum		30,149	32,894		
	Average		37,788	31,353		

Nuts broke and stripped without regularity at all loads, and the average figures given may be assumed to be figures for the basis of calculation of strength on the assumption that the nut will rupture by shearing.

The results of the bursting tests are purely comparative, since the peculiar method of application of the bursting stress renders calculations based upon the results valueless. It is to the manner in which the taper mandrel distributed the stress and to differences in ductility that the several peculiarities noticeable in the results of the bursting test are attributable. Thus the greater strength of the tapped nuts compared with the blank is due to the fact that with the blank nuts only the upper edge of the hole in the nut was at first in contact with the mandrel, while the tapped nuts, by the crushing down of their threads, brought into bearing a larger surface, and thus, while the absolute resistance of a blank nut may be in excess of that of a tapped nut, by the amount of the extra metal it contains, it may not render available as much of its resisting section as a tapped nut.

It is proposed to supplement this statement of the results of tests of strength of nuts with a report on the cost, as determined by experiment, of finishing the two styles of nuts. This will, it is hoped, enable any one to arrive at a satisfactory determination of the true relative value to the consumer of hot-pressed and cold-punched nuts.

The full report, with the cuts showing the manner of testing, and the elaborate tables of details, being too long for publication in a periodical, will be published entire, with the report of the finishing test, in pamphlet form. Copies may be had upon application to Messrs. Hoopes & Townsend, Philadelphia, Pa.

The following statistics will give an idea of the progress made during the last twenty years by the Colony of Victoria: In 1857, it contained 364,000 inhabitants; now its population is 814,000. The land under cultivation, then only 115,000 acres, is now, 1,000,000 acres. The wheat grown annually has risen from 1,500,000 bushels to 4,850,000. The flocks and herds have multiplied exceedingly. In 1855, the sheep numbered 530,000; they now number 11,250,000. The cattle, which were then only 530,000, at present amount to over 1,000,000—one, in fact, for every acre of cultivated land. The horses have increased from 33,000 in 1855 to 530,000. The public revenue, $20,000,000, has more than doubled at the same time. Imports, which in 1855 stood at $60,000,000, are now $85,000,000 in value; the exports have also swollen from $65,000 to $75,000,000. These figures show how much the progress of a country depends on the energy and enterprising spirit of its inhabitants.

The feeling that in the United States Great Britain has a dangerous competitor for the commerce of the world, is apparent to any one reading the English newspapers. Thus, the London *Times* rejoices over the end of the strike in Glasgow, which for six months has paralyzed the enormous iron ship-building trade of that city, and calls attention to "the ominous fact that, during the last three or four months, in which the Clyde ship-builders have been prevented from taking contracts by the quarrel with their workmen, the ship-building business has shown sudden signs of revival in the United States. * * * The same follies which drove the trade away from Millwall to Glasgow may drive it from Glasgow beyond the Atlantic, and the Clyde has no spell to win it back except those which the Thames has used in vain." The strike caused a loss to the workmen, in wages alone, of $400,000.

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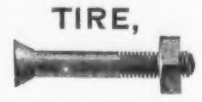

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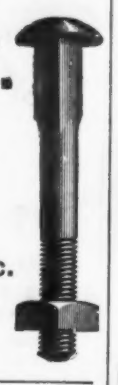

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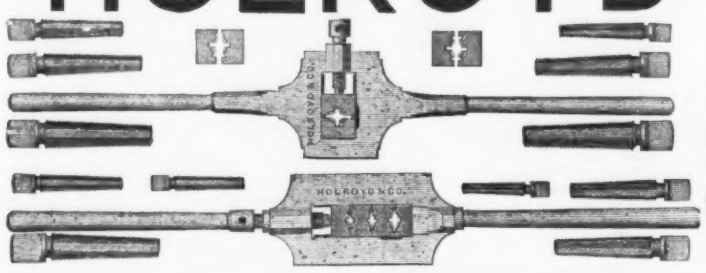

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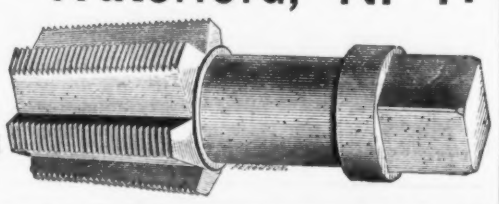

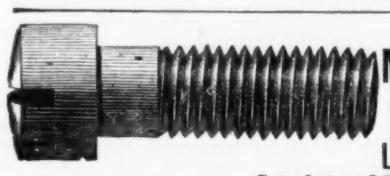

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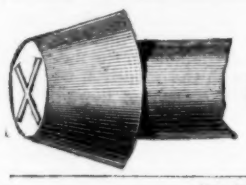

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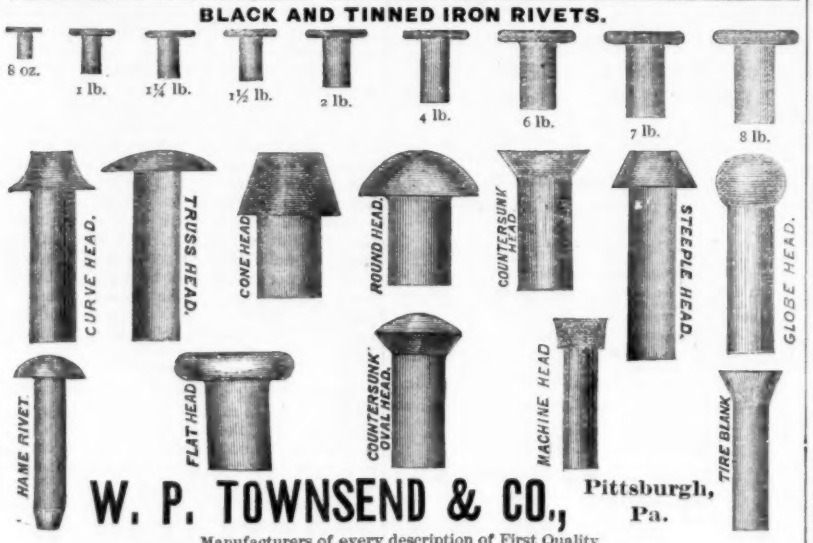

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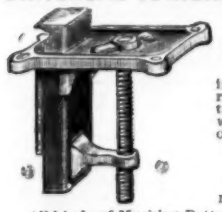

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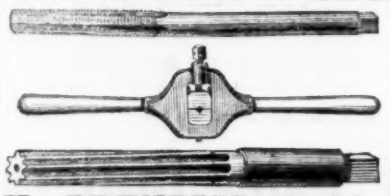

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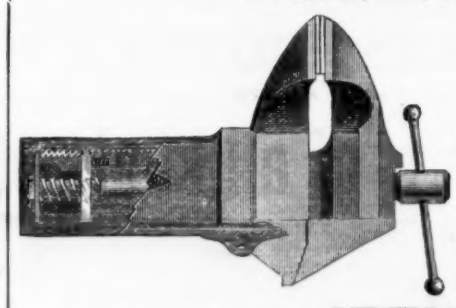

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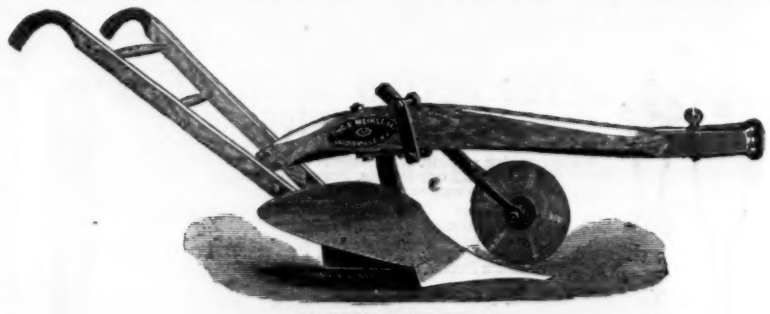

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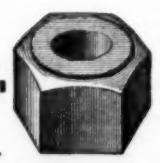

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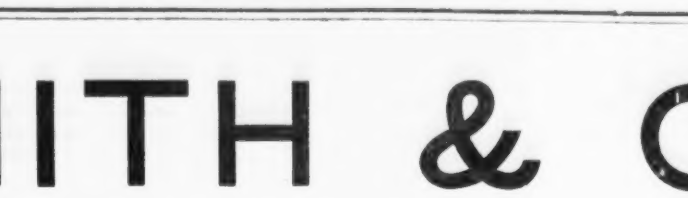

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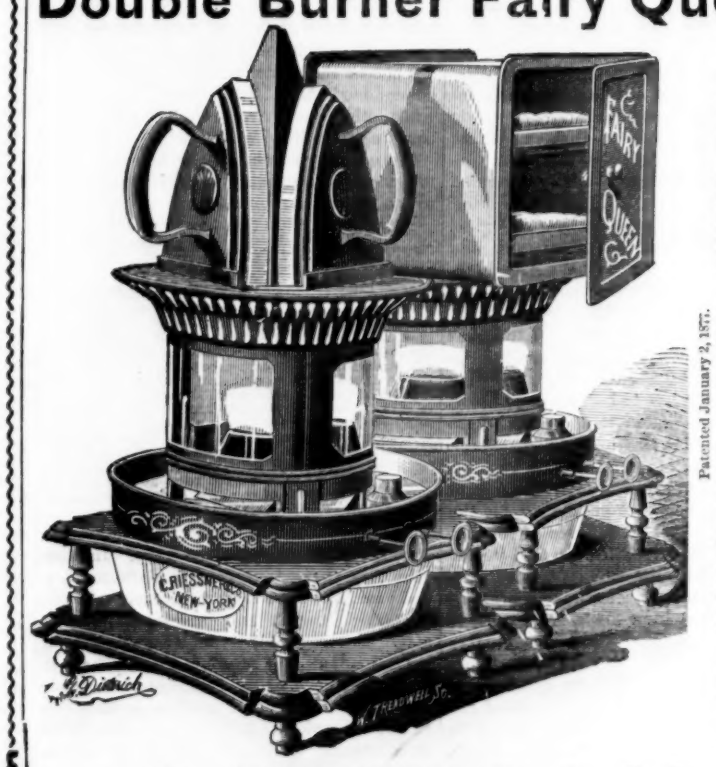

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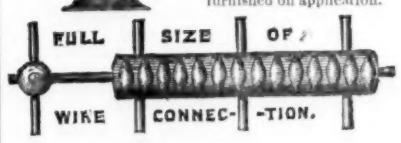

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Thirty-ninth Page.—Philadelphia, Buffalo Chicago and Pittsburgh Hardware and Metal Prices.

Forty-first Page.—Boston and St. Louis Hardware and Metal Prices.

The appointment of Mr. John Welsh to the English mission will give very general satisfaction. Mr. Welsh has been for many years honorably prominent in public life, not as a partisan or office-holder, but as a public-spirited citizen identified with philanthropic works and great enterprises. To the nation at large he is best known in connection with the organization and successful consummation of the Centennial Exhibition. His responsible duties as chairman of the Board of Finance were discharged with a fidelity and thoroughness which won him unusual respect, while his general courtesy and elegant culture have secured him a wide circle of devoted personal friends at home and abroad. His long and successful experience in commerce is an additional reason for his appointment. During the next few years the commercial relations between this country and Great Britain will probably possess far more importance than any questions purely diplomatic, and to deal with these a statesman educated in the school of commerce is obviously better qualified than one reared in the school of politics.

The Ores of the "New Iron District" of Ohio.

There is probably no part of the United States which has so nearly monopolized the attention of the iron trade during the past two years as that portion of Perry and Hocking counties, Ohio, commonly known as the Straitsville district. It has had an amount of gratuitous newspaper advertising which no other section, however favored, has succeeded in securing. The resources of the country have been a subject on which newspaper correspondents have dwelt with great satisfaction, and the estimates of the cost per ton of iron which could be made there, have startled the trade and made the owners of furnaces in less favored localities rub their eyes and wonder whether it would long be possible for them to compete with the product of furnaces drawing their materials from this new Bonanza of ores and fuel. Capital has flowed in for investment from all sides, furnaces have sprung up like mushrooms, mines have been opened on every hand, and many have believed that in the Straitsville district had been found a veritable *El Dorado*. Now that speculation has in some degree culminated and a vast amount of capital has been locked up in mining lands and furnace plant, a great many are doing what should have been done at the outset—looking carefully and intelligently into the resources of coals and ores on which the expectations of a great product of cheap pig iron were based. Without any desire to cast doubts upon the claims of the Straitsville district to recognition as a future important center of iron production, we think it quite safe to assume that there have been a great many injudicious investments made there on imperfect knowledge, and that many of the expectations of a large product of good iron at $11 or $12 per ton will never be realized. If there has been any mistake at all, it has been in an over-eagerness to make investments without a full and intelligent examination of all the conditions.

Our attention is called to this subject by an important paper on the ores of the Straitsville district, contributed to *The Metallurgical Review* for November by Mr. Edmund C. Pechin. After a careful survey of the whole field, a personal examination of most of the openings and a comparison of such analyses as have been made, Mr. Pechin concludes that the ores of the district have been, generally speaking, greatly overrated, and that serious disappointments are in store for many who have already made large investments. Admitting that the district has vast and valuable resources of coal and ores which can be profitably utilized, Mr. Pechin cannot refrain from expressing astonishment at the way in which business men, usually cautious and unimpulsive, "have rushed "into the district, made extensive pur-"chases of land at full figures and spent "large sums of money upon furnace plants, "only to find their paper profits vanishing "into thin air and their bright expectations "ending in disappointment."

The confidence of investors in the abundance and excellence of the native ores was based chiefly upon two principal seams—the "Baird" and the "Shawnee." The former is about 35 feet under, and the latter about 110 feet over, the Big Coal Seam, No. 6. Prof. Orton, of the Ohio Geological Survey, believes this ore, which is peculiar in appearance and quite unlike any other in the district, to be identical with the "limestone ore" of Hanging Rock, as he has traced it continuously from one district to another. An average of a large number of analyses by the chemist of the Kentucky Geological Survey gives:

Limonite	46.22
Carbonate	33.60

The extent of the supply has not yet been determined.

Of the "Shawnee" Seam Mr. Pechin finds himself unable to give a very satisfactory account. There may be more of it than has been found, but as regards the ground actually proved, its exhaustion by the four furnaces already built at Shawnee is a question of a very few years, and Mr. Pechin is of the opinion that, without further positive developments, the erection of any more furnaces in that neighborhood would be attended with very great risk. It is an interesting fact that this seam is on the same geological horizon as the Blackband ores, and, like them, may prove vexatiously irregular. Mr. Pechin believes that other deposits of this peculiar character will be discovered, or other ores found in the same horizon, and that the seam is one which should receive the prompt attention of all who own lands with measures high enough to include it.

The greatest disappointment which those who have invested in this district have known or are likely to know is, in Mr. Pechin's opinion, the so-called Bessemer ore which, when first opened, was supposed to be the Shawnee seam. This he believes to be what is known in other localities as the "Sour Apple" ore. This ore contains, according to analyses of samples from the out-crop at Sunday Creek and Snow Fork, from 41.31 to 43. metallic iron and from .528 to 1.15 phosphorus. That the iron made therefrom would be seriously cold-short, requires no demonstration; but the worst feature of the "Sour Apple" ore is that it comes out in bowlders. When broken open the lumps are found to contain a blue limestone heart. Near the out-crop the heart is usually no larger than a walnut, but as it runs under cover the thickness of the iron shell decreases until, at a distance of from 50 to 70 feet, the ore ceases and a poor limestone alone is found. Mr. Pechin gives a number of analyses to show the variableness of this material, and concludes that it would require a founder of superhuman intelligence to get satisfactory results from an ore in which the proportions of iron, lime and silica are so constantly varying. He believes that it can only be worked satisfactorily in admixture with enough red-short Lake ores to neutralize the phosphorus, the amount being determined by constant analyses of the calcined material as it is transferred to the stock house. In this way a fairly good cheap iron may be made; but it is quite certain that no more properties will be sold on the strength of "Sour Apple" ore.

Another and very important question to which Mr. Pechin calls attention, is that of water supply. Several of the furnaces now in operation have been seriously inconvenienced this fall for want of water. Most of the small streams are subject to extreme variations. During heavy rains they fill so rapidly as to tax the strength of dams, and during the summer season they are apt to dry up. Mr. Pechin thinks it not improbable that, in the event of further large developments, furnaces and mills will have to be built on the Hocking River, and get their raw materials over railroads extending up the numerous smaller streams.

In view of all the facts, it seems not improbable that a great iron industry may be gradually built up in this district; but the conditions of success are much the same there as elsewhere. Caution, good judgment and skill are all needed, and satisfactory results can be reached only through the co-operation of the engineer, the chemist and the man of business. Without all these, there are few places likely to attract capital where money can be more readily locked up in permanently unprofitable investments. We have no doubt that Mr. Pechin's words of warning will be distasteful to interested parties, but they cannot fail to arrest the attention of prudent capitalists, and will not be without influence in giving a right direction to enterprise which might otherwise be misapplied.

The Institute Meeting and the Salisbury Ore Region.

We publish on the opposite page abstracts of some of the papers read at the recent meeting of the American Institute of Mining Engineers, held at Amenia, Dutchess county, New York. The attendance was quite large—much larger, indeed, than was anticipated; the papers read were full of interest, and the excursions, through a charming region of country, were rendered most enjoyable by the unbounded hospitality of the local committee and the presence of ladies, who joined the party at Lakeville.

The Salisbury ore region embraces an area 50 miles long by 15 wide, running northeast and southwest, and centering at a point where the boundaries of Connecticut, Massachusetts and New York States meet. The ores of this region are brown hematites, found in beds or deposits or veins, mixed with clay or gravel, in the Lower Silurian and in lines parallel with the Green Mountains. Generally, the ore is found with limestone on one side and slate on the other, but at some places it is on both sides of the limestone, and at others limestone lies on both sides of the ore. The beds are found from 6 to 30 feet beneath the surface. Most of the beds are mined in open cuts, but a few are worked with shafts and drifts. The beds are wonderfully mixed, and the strata puzzlingly contorted. The ore is mixed with loam, sand, blue clay, slate, &c., and occurs in all forms—gravelly, balled, in shells, pipes, stalactites, mamillary masses thrown about irregularly, in variable quantities and qualities, in level layers, horsebacks and lenticular deposits. The ore is removed from most of the beds in the old way, by drawing it out with horses and carts, but some are provided with machinery. The washing of the ore shows the same extremes, some of it being done in the old-fashioned sluice boxes, while other beds are provided with Newbould and Bradford washers.

The quantity of water entering the various mines varies, according to locality, from 25 to 700 gallons per minute.

At present 22 out of the 38 mines in this region are in operation. In speaking of the output, Mr. James F. Lewis says:

Before the panic of 1873, Dutchess county alone produced 180,000 tons per year, 60,000 tons being smelted into charcoal pig iron and 120,000 tons into anthracite pig, at the furnaces on the Hudson, from Manhattanville to Troy. Columbia county turned out 35,000 tons per year, 28,000 tons being used at the charcoal furnaces and 7000 tons at the anthracite. The Salisbury mines produced 50,000 tons, all of it being used in Lichfield county for charcoal pig. The Berkshire county, Mass., mines produced 65,000 tons yearly, of which 20,000 tons were used for anthracite iron and 45,000 tons smelted into charcoal pig; a total of 330,000 tons of hematite ore per year, against 180,000 tons at the present time. The analysis of the ores shows from 35 to 53 per cent. of metallic iron.

The make of pig iron in this section has very much decreased since 1873. In that year over 50,000 tons were manufactured—last year, not more than 20,000 tons. There are in this region 21 furnaces equipped to make charcoal irons—5 in Massachusetts, 9 in Connecticut and 7 in New York. There is but one furnace using anthracite. In construction, design and appliances they are mostly old style, and differ but little from each other. Stacks are built of stone, erected against a bank the brow of which is close to and nearly on a level with the tunnel head, to which the charcoal, ore and flux is delivered on wheels without cost of elevating. With slight variations, the stacks are 32 feet high by 9 feet bosh. The hot-blast ovens are erected on top of the stacks, which in most cases are large enough to admit of this and the chimney also, with which all are provided, the common hight being about 35 feet. To 15 furnaces power is supplied by water, to three by water and steam and to three by steam. A moderate pressure and low temperature are used. A furnace of this size will make about 10 tons of iron per day, the total maximum production amounting to about 75,000 tons, for which 190,000 tons of ore and 10,000,000 bushels of charcoal are required, equivalent to wood from 12,000 acres of woodland.

Estimates of the cost of producing iron in the Salisbury district vary greatly, as they are based upon the consumption of charcoal and price paid for ore. The furnaces which make the best iron consume about 140 bushels of charcoal to the ton. Charcoal has been bought for the past season at 8 cents, delivered, but managers are not prepared to make estimates for full year's supply for less than 10 cents. The best ores cost $5 per ton, laid down at the furnace, and an estimate, based on these prices and present cost of labor, at less than $30 per gross ton cannot be depended upon. The iron is graded in seven numbers for the car wheel trade, which is its largest consumer, the remainder going for malleable iron, ordnance, agricultural tools, machine rolls and castings.

The excursions of the Institute were not only full of historical and technical interest, but they were through a section full of natural beauty. The landscapes of Dutchess and Columbia counties, New York; the lakes, rivers and falls of Lichfield, Connecticut, and the hills of Berkshire, are too well known to need more than a passing mention. These excursions will be long remembered by those whose good fortune it was to participate.

The most important feature of this meeting was the action of the Institute changing the method of publication of its papers and proceedings. The contract at present existing expires December 31, 1877. The papers for the next meeting are to be published in pamphlet form and marked, "Subject to revision." After a reasonable time for such revision, the papers will be published in "Transactions." The plan is virtually that of the British Iron and Steel Institute. Some modifications will doubtless be made, a committee having been appointed to consider the subject and report at the February meeting. Of the great importance of the adoption of this method we need not speak at length, as we have so often given our views on the subject. In the few years the Institute has been in existence it has done a work for mining and metallurgical interests the value of which cannot be estimated, which has not only been recognized at home but abroad; and all who know this work can only express the wish that the past shall be but an earnest of the abundance of the future.

The Legal Status of Advertisements.

A curious and interesting case has been decided in the Superior Court, involving new and somewhat peculiar points of law, of interest to all who advertise. The facts are briefly as follows, omitting the names of the litigants: In December, 1876, A, doing business as a wholesale grocer, discharged B, who had been employed as head of the tea department of his store. B sued A in the Superior Court for $250, one month's salary. In circulars sent out by A was the statement that they had the best tea buyer, whose sole duty it was to watch the market for bargains. A's defense was that B spent too much time in the tea market. Chief-Justice Curtis charged the jury on the trial as a matter of law that "when a "man presents to the public in the form of "a circular or advertisement statements, "he is bound by those statements. It is not "for him to say that it is a matter of busi-"ness, or when business is dull a matter of "course, to issue statements that are un-"true. If, after advertising his wares, "goods or medicines with statements for the "public to act upon, he comes into a court of "justice, he is bound by those statements. "The law knows no difference between pre-"tenses that are false except in the degree "of moral or criminal turpitude, and in the "punishment that attaches to them. The "man who seeks by false statements in re-"gard to his business through an advertise-"ment to delude the public, when he does it "to reap profit for his own advantage, is "taking the first steps on that road which "terminates with false pretenses, with for-"gery, with crime and with those acts which "imperil the interests of all of us, and which "tend to destroy the property, and perhaps "the reputation, of every citizen."

The jury gave a verdict against A for $265. It must be admitted that there is much sound practical common sense in Judge Curtis's decision. This is a very different point from that covered in the decision in the case of Hall vs. Hall, Kimbark & Co., which our readers may remember. In the case last named the plaintiff took advantage of the defendants' circular, offering certain goods at a very low price, to order a large line on speculation. The order was not filled, but the court held that the defendants were bound by the offer made in their circular and the plaintiff recovered large damages. Both cases are of importance, however, as showing the practice of our courts in fixing the measure of legal responsibility which those must assume who make positive statements in advertisements. In a word, what a man says in his advertisement is regarded as his deliberate and public statement, to which he can always be held, and the interpretation put upon such statement by the courts is likely to be extremely literal.

The Idea of Protection in England.

Mr. L. J. Jennings, in a letter to the *World*, makes some interesting statements respecting the gradual change of public sentiment in Great Britain on the subject of protection to domestic industry. Commenting on Gen. Grant's speech at Birmingham, Mr. Jennings says:

The fact is that the cry for protection is daily growing stronger in this country. Two members of the Cabinet have argued against it; the *Times* and *Telegraph* have taken up the tale. But it will not do. The workingmen are thoroughly alarmed. They see American calicoes in every shop window, and know that they are admitted into this country duty free. They know also that English goods are not admitted into the United States, except at prohibitive rates. Hence they say: "Give us a protective tariff also; we cannot go on fighting against all the rest of the world on these unequal terms. We are paying too dear for being on the 'right side' of political economy." It will be impossible to disregard this cry much longer. Of course the philosophers are very much startled and puzzled, as they generally are when a hard, practical question of every-day-life suddenly stares them in the face. But how are they going to provide a remedy for the commercial disaster which now threatens England? How can they deny, indeed, that free trade is practically injuring England at this moment? If all the world adopted the same principle as the basis of commerce, no doubt it would work well enough. But at present England stands absolutely alone. Everybody can sell in her shop; she is not allowed to sell in any shop but her own, and that is half filled with better and cheaper wares made by foreigners. For on that point we may take what the *Times*' market report says as rather under than above the mark: "The business done with Australia and New Zealand in Birmingham and Sheffield is not now a tenth of what it was three years ago. There is evidence that the Australian orders for American hardwares have increased in the same period nearly twenty-fold, owing, as alleged, to the superior quality, design and finish of these goods, and in no way to their cheapness." And the same thing is true of cotton manufactures.

We do not think we can agree with Mr. Jennings that "it will be impossible to disregard this cry much longer." A change in the "traditional policy" of the British Empire will not be quickly nor easily accomplished. The export and carrying trades are those which exercise a controlling influence in Parliament. The workingmen may clamor for protection and its attendant benefits, but those whose influence will be felt most powerfully for years to come are those who do not want labor benefited by any change which will deprive Great Britain of the great advantage of cheapness in her manufactures for export. Again, in estimating the result of conflicting forces now at work, we must remember that the English people are always conservative, and that a change in the nation's policy of commercial legislation would be steadily and continuously opposed at every step. It is, in our judgment, more probable that the nation will postpone any such change until it is forced by the menace of industrial and commercial ruin. This, as any thinking man may know, is not a thing of the immediate future, at least.

Robert Crawshay.

Mr. Robert Crawshay, a gentleman who is commonly mentioned by the English newspapers as "the Iron King" and who has certainly for many years occupied a very prominent position in the British Iron Trade, has retired from business under conditions which are not without peculiar significance. In a letter to a friend, part of which has found its way into print in the London papers, Mr. Crawshay says: "Trade is "worse than ever it was, and I see not the "slightest chance of Cyfartha starting again. "I think so badly of trade altogether that I "have no wish to see my sons remain in it. I "do not think I can possibly live very long, "and if I am able I shall sell the works "before I die. There is nothing now to "bind me to them, for I have been estranged "from them by the conduct of the men. I "always hoped and expected to die with the "works going and the same feeling among "the men for their employers as before; "but things have changed and all is different, "and I go to my grave feeling that I am a "perfect stranger, as nearly all my old men "are gone."

There is something pathetic in this almost despairing prophecy of the future of the iron trade of South Wales. Three years ago Mr. Crawshay's fortune was estimated at $40,000,000, but the shrinkage in values and the losses attending the making of iron during the past few years, have made heavy inroads upon this enormous capital. Mr. Crawshay retires to save himself and his family a comfortable competence, and it is probable that this long-famous name will never again be borne upon the records of the iron trade. A correspondent of the New York *Times*, speaking of the reasons which have impelled Mr. Crawshay to this step, says:

The foundation of that colossal fortune was laid at Cyfartha during the American war of independence, when the Crawshays worked out large government contracts. Until recently the thriving city of Merthyr-Tydvil found its entire existence in the Cyfartha industries. All along the valley the furnaces blazed, the railways ran, the vast mines gave forth their wealth; tradesmen thrived, stores flourished, the canal carried daily freights, the whole neighborhood was alive; and the man who engineered the entire thing was Robert Crawshay, sitting quietly at home in his castle, the windows of which reflected back the glare of the furnace fires. Now all is quiet. The fires are out; idle men and women crawl about the valley; a few pits are at work, but the old aspect of happy toil and noisy labor has changed to a solemn and ominous gloom, and the owner, broken in health and spirits, laments the old days when he played the father to his people and his people heartily accepted the position of his children. If trade was good, wages went up and overtime was well paid; if the price of iron fell, Crawshay made deductions, and so men and master went up and down together. But in due course trade unions and competition changed all this; men talked of their rights, and declined to have their wages reduced; they addressed their master as their equal; they discussed profit and loss with him; they refused to accept his word; they struck when he was busy, and compelled him to forfeit important contracts; they blew out his furnaces when he wanted them lighted; they declared war. They found their match in a naturally kind-hearted, but obstinate man, who could not endure dictation, who got mad at what he regarded as ingratitude; and he now declares that confidence between him and his men is at end, and that he will die estranged from them, and, if possible, no longer proprietor of the works founded by his fathers and maintained for 200 years with distinguished honor and success.

It might be supposed from this that Mr. Crawshay's retirement from business was caused by his troubles with the men in his employ. This is in a great degree true, but from his own words it is evident that he finds but little ground for hope in the condition and outlook of the British iron trade. Some allowance must be made, of course, for the depression of spirits resulting from the bitter disappointment he has experienced, in finding distrust where he expected confidence and ingratitude where he hoped for love. We trust his declining years will be made happy by the consciousness that he has all his life been a liberal and intelligent friend of the workingman, and that if his cherished hopes were disappointed, he has done his duty and won the respect of all who appreciate enlightened philanthropy.

Do the Unions "Fix" Wages?

To the Editor of The Iron Age: Your article, "Fixed Wages," in last week's issue, assumes a principle which the unions repudiate. They name a minimum rate of wages, not a maximum, and do not admit that this system has the effect you describe. An employer is not restrained from giving his men, or any number of them, more than the "scale," but he is prevented from giving them less; and there is the trouble, for to do the average employer justice he generally wants to give less. That their members are not always competent men is not entirely the fault of the unions, for although they may restrict the master as to the *quantity* of his apprentices, they certainly do not restrict him as to their *quality*. Besides, employers are not compelled to keep incompetent men. It is their business to get good men, and if they fail to do so, surely the unions are not to blame. But how, I would ask, is a union —this ideal union of freemen of which you speak—to exist where every man may work for what he chooses? The fundamental principle of trade unions is gone, and with it cohesion and defensive power.

As an ounce of fact in this matter is worth a pound of fiction, I will give you an example of what mechanics who do not or cannot combine to keep up the price of their labor, may expect when left to the tender mercies of the compassionate "boss." Rather more than two years ago the Typographical Union of this city numbered over 2000 members and was in a good position financially. Today it has not half that number and is practically bankrupt. Through a succession of unfortunate blunders, not likely to be repeated, which culminated in the *Tribune* strike (where the employer kindly proposed a reduction amounting to 30 per cent.), the union was to a great extent broken down; and now, except in a few offices where the employers have a conscience, or are restrained by prudence, the descendants (mechanically) of Gutenberg, Faust and Caxton are working for less wages than a hod carrier. Trade unions—not aggressive, but defensive—are a necessity of the times. The race which men run nowadays for wealth renders them grasping and avaricious, and they care not how many of their fellow beings they trample under foot provided they win. Are workingmen, then, to give up the only means they have—combination—to obtain from these men the means of living? The workingman—by workingman I mean the wage-earning class—is the greatest factor in a nation's wealth, and yet when he asks for bread is he to be given a stone? Is he to have no share, or at best a mere pittance, in the wealth he creates? The only true freedom for the workman is to treat with his employer on equal terms, and he can only do this by combination; and the free American citizen, or whatever else he may choose to call himself, will find what kind of freedom he enjoys when he gives up the principle of combination and trusts to the generosity of capital. UNION.

NEW YORK, Oct. 30, 1877.

Comments by the Editor.

To the above we reply as follows:

The principal evils of the union system grow out of the attempt to establish an equality among men when no such equality exists.

The rate fixed by the unions is a minimum, it is true, but it is usually above the value of the services of poor workmen, and below the value of the services which the best men are able to render.

The "average employer" cannot afford to pay the best man in his employ all he is worth, so long as he is compelled to pay the poorest man more than he is worth.

The quality of an apprentice depends largely upon the manner in which the journeymen undertake his education.

Many serious and costly strikes have grown out of the efforts of the unions to compel employers to retain the services of incompetent men.

Self-defense furnishes the strongest motive for co-operation. The miners of Messrs. Correy & Co. have united to defend their individual rights as workingmen and their liberties as citizens, against a tyrannical and irresponsible power which seeks to force them into a servitude obnoxious and distasteful to free men.

The "ounce of fact" given by our correspondent shows two things: 1. Labor cannot, even with organization, compete with organized capital; 2. It is not to be wondered at that when employers have for years been subject to unwarrantable dictation, and have had to pay more for labor than it brought in the open market, they should push their advantage beyond the point of generosity.

Our correspondent is perfectly right in one statement: "Trade unions, not aggressive but defensive, are a necessity of the times." Messrs. Correy & Co.'s men have organized a defensive union; as an example of the aggressive unions we think it scarcely necessary to more than mention the anthracite miners in their recent operations. The trouble is, our workingmen, when organized under the lead of unprincipled demagogues, are apt to have rather confused notions as to where defense stops and aggression begins.

American Institute of Mining Engineers.

We present below abstracts of some of the papers read at the Amenia meeting of the American Institute of Mining Engineers. Others were published last week, and more will be found in our next issue.

REPORT OF COMMITTEE ON WIRE GAUGE.

At the February, 1877, meeting of the institute, attention was called by Mr. Jos. D. Weeks to the confusion arising from the great multiplicity of gauges in use in this country as well as their inaccuracy, and the necessity of a reform in this matter by the adoption of some gauge that should be accurate, easy of adjustment, cheap and easily used. A committee was appointed to consider the subject who reported as follows:

The Committee on Standard Gauge have been constantly engaged since their appointment in the duties assigned to them. They have corresponded with different persons interested in the manufacture and use of gauges in this country, and have received from several of them important information. They have also entered into correspondence with the governments of England, France, Germany and Russia through their consuls, and with Austria directly. The consuls of Germany and France have taken the greatest interest in this matter, and have communicated to your committee a large amount of valuable information relating to the gauges used in their countries. Prof. Tunner, of Leoben, Austria, one of our honorary members, has communicated information relative to the uses of gauges in Austria. The replies to the communications addressed by the English and Russian consuls to their respective governments have not as yet been received.

Your committee commenced its labors, having in view the finding of a gauge which should be simple in its construction, not readily worn, capable of easy adjustment and not too expensive to be used by the ordinary workman. With this in view they have examined a large variety of gauges, and believe that all those in general use in the United States have passed under their inspection.

We find as the result of our examination that, although there are a great number of patterns, most of the gauges in general use differ but slightly in principle. The different systems may be divided into two general classes. These are, *first*, fixed, and *second*, movable gauges.

Of the fixed gauges there are three general types. These are, first, those made with slots open at one end, the sides of which are intended to be parallel, as the ordinary wire gauge; second, those made with round holes made in a plate with or without a plug corresponding to each hole to check the size, such as the Whitworth gauge, and the Stubb's wire gauge, better known in this country as the "twist drill" gauge. In both these types of gauges the slots and holes are designated by numbers. The third type of fixed gauges consists of a V, either cut into a sheet of steel or formed by placing two bars of steel together at one end and leaving them open at the other a fixed distance.

Of the movable gauges there are two types—sliding callipers with verniers, with or without a micrometer screw for adjustment, and the micrometer screw gauge.

Your committee find that the gauges which are characterized by round holes or slots, designated by numbers, are only approximately correct. They not only differ in those of different manufacturers, but in a dozen made by the same manufacturer there often were very perceptible and annoying differences. They find that in the gauges with open slots the sides are rarely parallel, and that there are even greater variations in them than in the gauges made with closed round holes without plugs. They find that the numbers affixed to these holes vary so much, on account of the differences in the diameters of the holes, as to be a constant source of inaccuracy, uncertainty and annoyance. This variation has in certain cases been found to amount to as much as 50 per cent. of the weight of different wires of the same number which have been examined. It is therefore impossible to make even an approximate comparison of sizes, unless, besides the number, not only the kind of gauge, but also the name of the maker is specified, and even then this approximation cannot be relied upon when the gauges have been worn from constant use or bad tempering.

The best examples of the round holes with plugs is the Whitworth gauge, which is made of a thick plate of tempered steel. Each hole of the gauge is provided with a hardened steel plug which fits it exactly. In all recent gauges of this kind the system of numbers is abandoned. The plug is made of a given diameter, which is stamped in figures on each one. These diameters generally vary by 32nds, 16ths, 8ths, 4ths, and so on, each size having a hole and plug of its own, so that a complete set will consist of as many holes and plugs as there are fractional parts. To obviate the difficulty of the indefinite repetition of the plugs, they are sometimes made so that when any two or even three plugs are placed together they will exactly fit the hole corresponding to the sum of their diameters. This arrangement is made to insure accuracy, as the multiplication of a very slight error would prevent even two plugs from fitting the hole corresponding to the sum of their diameters. When well made this gauge is an instrument of precision; but it is evident that in order to have such a gauge even moderately accurate, it must be very expensive and altogether beyond the reach of an ordinary workman, or even of a manufactory with small capital, and also, from the indefinite multiplication of holes and plugs, it must necessarily be very cumbersome.

When they are used there must always be two such gauges, one for comparison and one for use, and when the gauge is only very slightly worn it ceases to be an instrument of precision and is then open to all the objections of the ordinary gauge with fixed holes.

Your committee therefore very early in the course of their investigation, formed an opinion that no reliance whatever was to be placed on the numbers of gauges as an indication of size, except for the individual gauge to which the number was attached, and that the only accurate and scientific way of expressing the size of an article to be gauged was by some expression of its diameter which should be more exact than numbers and which would allow of an accurate comparison of all the dimensions by whatever gauge they were taken.

Your committee are supported in this opinion by the present practice among some European manufacturers who have recently acted in this matter, who have decided that a given number on a gauge shall correspond to a given diameter expressed in fractions of the legal standard of length of the country; but as in all fixed gauges made for ordinary commercial use the diameter can only be approximately expressed, neither the number nor the diameter are ordinarily correct, so that there is a double source of inaccuracy, and the number does not express the exact diameter nor the diameter the number.

Owing to the great liability to error, and the impossibility of correcting it, even in the most elaborate forms of this kind of gauge, your committee, early in the course of its investigation, after having themselves examined a large number and having had communicated to them the results of examinations made by others, dismissed from their consideration as a standard gauge this class, as being unsuitable either from their defective construction, the impossibility of adjusting them when out of order, or their great cost.

Your committee next turned its attention to the V gauge, which is made by placing together two pieces of hardened steel so that they touch at one end, but are open a given distance at the other, the numbers or diameters corresponding to the opening being engraved upon one or both of their sides. The accuracy with which measurements can be made with this gauge when it is new and the jaws properly tempered, adjusted and fastened, is surprising. Exceedingly minute differences, even in the diameters of the same wires, can be detected and measured with great nicety, but by constant use the gauge wears unevenly. It must then be taken apart and readjusted, which will generally cost more than the gauge is worth.

Your committee, while having the highest opinion of it for ordinary purposes, after some months of study have abandoned the idea of recommending it as a standard gauge.

Their attention was then turned to the other two kinds of gauges, namely, the sliding gauge with a vernier, with or without a micrometer adjustment, and the gauge known as the micrometer gauge. The advantage of these gauges is great accuracy. The vernier gauge necessarily wears, but is susceptible of adjustment after wearing. The error of wear in this gauge can be easily ascertained and allowance made for it after the gauge is worn. A very slight examination will allow of determining the rate and amount of wear when the gauge is in constant use, so that accurate measurement can always be made with it even when it is worn.

In the micrometer gauges the wearing surfaces are so arranged that they can be adjusted with ease in a few moments. The wear between the male and female parts of the micrometer can be adjusted by a binding screw. This adjustment can be repeated as often as required, so that the instrument will read with great accuracy until it is worn out. Your committee assured themselves by actual trial that with such gauges boys can be easily taught to read with great accuracy the thousandth of an inch or the fortieth of a millimeter, and that it is practicable to read even the eightieth of a millimeter.

The micrometer gauge is, of these two, the simplest. It consists of a micrometer screw, with a vernier attachment, is susceptible of easy adjustment, is not likely to wear, is not complicated, is less likely to get out of order than the other gauges, is more easily read and requires less skill to read it than the sliding gauge with a vernier. Your committee are, therefore, of the opinion that this gauge, examples of which are shown, is the gauge which should be adopted as a standard gauge.

They are of the opinion that all gauges should be graduated so as to read fractions of an inch or of a millimeter, and that the sizes should be so expressed, as the only means of insuring correct measurements, and not by numbers which constantly lead to error. That this, while it insures accuracy, presents no difficulty in practice, is shown by a number of experiments made during a period of several months to ascertain the practical difficulty in the way of the adoption of this method by a member of your committee. The sizes of some of the steel bars, the order of which were expressed in thousandths of an inch, are given below.

Sizes, expressed in decimals of an inch, taken at random from the order of a manufactory which has adopted this method:

15.5	X .014	2.75	X .051
15.	X .02	2.75	X .035
15.	X .014	2.50	X .059
5.25	X .061	2.50	X .022
4.50	X .062	2.25	X .031
4.	X .024	2.15	X .059
4.	X .022	2.25	X .046
4.	X .071	2.25	X .040
3.475	X .062	2.25	X .038
3.25	X .01	2.25	X .055
3.	X .0145	2.25	X .020
3.	X .018	2.	X .018
3.	X .02	1.50	X .032
3.	X .0125	.75	X .095
2.75	X .030	.25	X .062

The adoption of this system by the manufacturers who have used it has resulted in the abolition of the old forms of gauge.

The conclusions which have been arrived at, for the most part independently, by the different members of your committee and in which they unanimously agree, are:

1. The abandonment of the system of fixed gauges for commereial use.

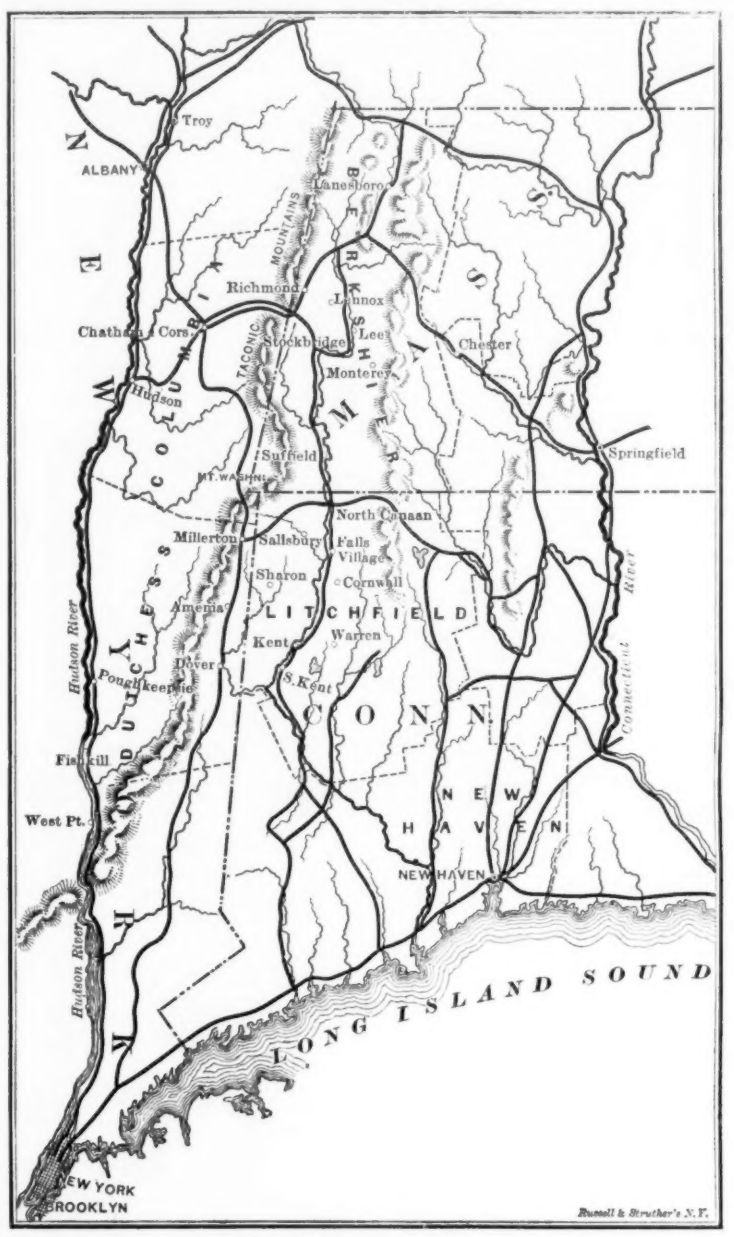
2. The abandonment of the system of representing the diameters and sizes by numbers.

3. The adoption of the system of expressing sizes in thousandths of an inch or fractions of a millimeter.

4. The adoption of the millimeter gauges as the method of measuring sizes.

Your committee beg to acknowledge their indebtedness to J. B. Knight, secretary of the Franklin Institute in Philadelphia, for the reports of various committees on gauges of the Franklin Institute; to C. Hewitt, Esq., president of the Trenton Iron Co., for a large number of measurements of wire made with different gauges: to P. Ritter von Tunner of Austria, for the description of the kind of gauges used in Austria; to the German Consul for his interest in procuring from Germany a report of their gauge system; to the French Consul for his interest in the work of the Committee, and to the Minister of Agriculture, Commerce and Public Works for a complete description of the gauge system as used in France. Your Committee is, however, particularly indebted to Darling, Brown and Sharpe of Providence, who have loaned to them, without charge, all the gauges which they manufacture for comparison, and have contributed besides a very large amount of information in various matters connected with this subject, all of which is respectfully submitted.

T. EGLESTON, Chairman.
WM. METCALF.
JOS. D. WEEKS.



THE SALISBURY ORE REGION.

NOTE ON THE IRON ORE AND ANTHRACITE COAL OF RHODE ISLAND AND MASSACHUSETTS.—A. L. HOLLEY.

The existence of iron ore and anthracite coal in the neighborhood of Providence, R. I., has long been known, chiefly as a geological fact. That these materials, so near to each other and to tide water, are of so good a quality and present in such large quantity as to have seriously raised the question of establishing blast furnaces there, was a surprising fact to me, and I have thought that the few notes I have hastily gathered on the subject would be of interest.

The coal field referred to has an area of more than 400 square miles, and is found throughout the belt of transition rocks extending from Newport Neck to Mansfield, Mass. The amount of coal is not estimated, but very roughly stated at "hundreds of millions of tons." Prof. Ridgeway, in a memorial to the General Assembly in 1868, states that the field is "a large but shallow one, made up of a cluster of beautiful coal basins, being identical with the lower coal series of the anthracite basin of Pennsylvania." The coal on the edges of the field has been not only broken up, but altered by heat and pressure such as the Pennsylvania field seems to have escaped, but Prof. Ridgeway states that it is regular and undisturbed and less altered in other parts. In 1875 a hole, sunk over 700 feet at a point in Massachusetts 5 miles from Providence, in the center of the basin, showed a bed of coal 9 feet thick at this depth. Its quality, judging from the core brought up, was superior to the coal previously worked. All this coal has a red ash, and burns with a greater freedom and with a fuller blaze than other anthracite. The ash is quite fusible, so that a moderate blast is required. S. L. Crocker, of the Taunton Copper Works, has used 10,000 tons annually from the Portsmouth mine. For steam and ordinary purposes, it was quite as good as Pennsylvania anthracite. For smelting copper ores, it was the best mineral fuel. The main shaft at this mine is 1400 feet on the incline, and the gangways aggregate 3½ miles. The Cranston mine has been reopened with a capacity of 100 tons per day. Most of the workings have been on the outcrop, altered as stated, but the alteration seems to have nearly freed the coal from sulphur. Prof. Jackson's analysis of the Portsmouth coal is as follows:

Water and volatile matter	10.00
Carbon	84.50
Ashes of dark red color	5.50

Prof. Shaler's analysis of Cranston coal (1876) is:

Volatile matter expelled at red heat	3.55
Carbon	82.25
Ash	5.85
Sulphur	0.026
Specific gravity	1.839
Hygroscopic moisture	8.55

The magnetic iron ore deposits at Cumberland are the most valuable in the State.

The "Cumberland Iron Hill" is a mass of ore 500 feet long, 150 wide and 104 high, and is estimated to contain over a million of tons above natural drainage, and probably a much larger quantity below. The ore averages 35 per cent., and is extremely free from sulphur and phosphorus, a late determination of P. being but 0.026. An analysis shows in one specimen 38.86 per cent. iron, and another 33 per cent., and the silica 25.54 per cent.

Dr. Chilton's analysis is:

Peroxide and protoxide of iron	58.50
Oxide of manganese	2.10
Oxide of titanium	3.66
Alumina and silica	26.38
Magnesia	6.80
Lime	0.65
Water and loss	1.96
Metallic iron	42.58

There are also hematite deposits, the largest being at Cranston, R. I.

Prof. Willis' analysis of this ore in 1870 is as follows:

Volatile matter	14.95
Peroxide of iron	76.285
Protoxide "	trace
Silica	4.84
Alumina	2.10
Sulphuric acid	0.118
Phosphoric acid	0.453
Protoxide of manganese	0.08
Lime	0.50
Magnesia	0.41
Loss	0.20
	99.936
Metallic iron	53.40
" in calcined ore	63.60
Sulphur	0.039
Phosphorus	0.182

It has been estimated that pig iron can be produced at less than $16 per ton, which is probable if the coal is a good blast furnace fuel. Whether it is or not, it seems likely that an ore of this quality, so near tidewater, may find a profitable market.

ANALYSIS OF SOME TELLURIUM MINERALS.—E. P. JENNINGS.

The specimens analyzed are from the John Jay Mine, Boulder county, Colorado, where the mineral occurs in quite large masses, though mixed with more or less silica and iron pyrites. It is usually a fine-grained, tin-white mineral, but sometimes occurs in distorted hexagonal prisms in cavities in the quartz. Before the blow-pipe it gives the reactions for tellurium, sulphur and iron; by cupellation yields a small amount of gold. An analysis of a coarsely crystallized specimen gave the following results:

Specific gravity	5.105
Tellurium	58.40
Gold	1.36
Iron pyrites	24.92
Ferric oxide	4.37
Silica and insoluble	11.54
Silver, lead and mercury	traces
	100.59

Deducting the pyrites, iron oxide and silica, we have for the composition of the mineral:

Tellurium	98.30
Gold	2.29
	100.59

(*Continued on page 18.*)

P. & F. CORBIN, Continued.

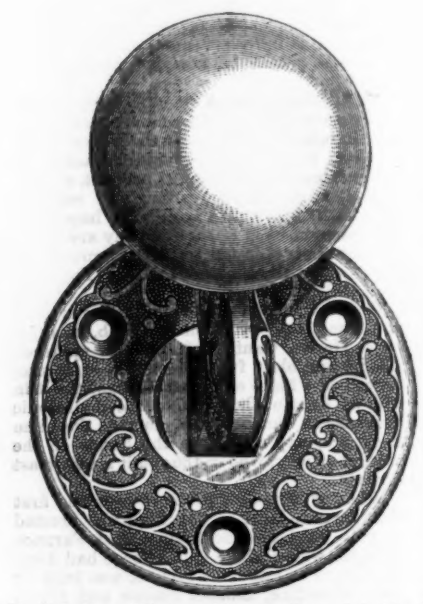
Sole Manufacturers of

Turnbull's Patent Double Stroke, and Spark's Patent Single Stroke,

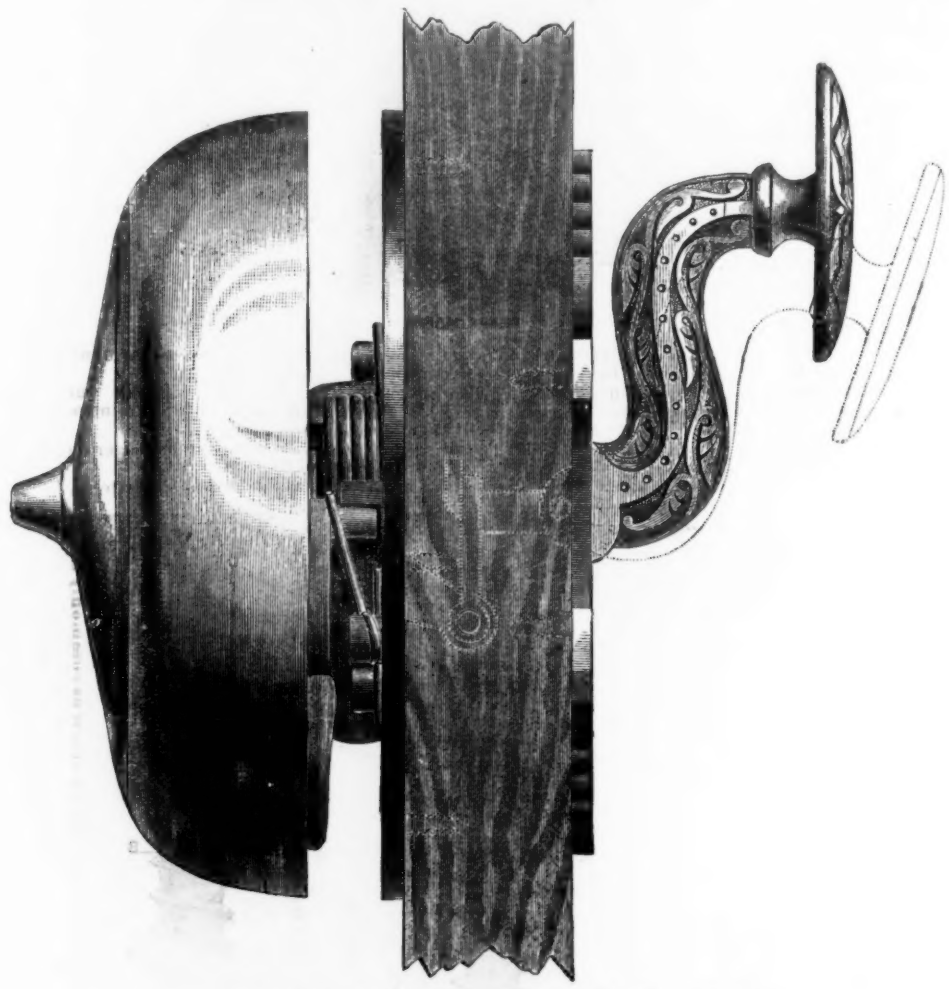
LEVER GONG DOOR BELLS.

Considered the Best Lever Door Bells in Market.

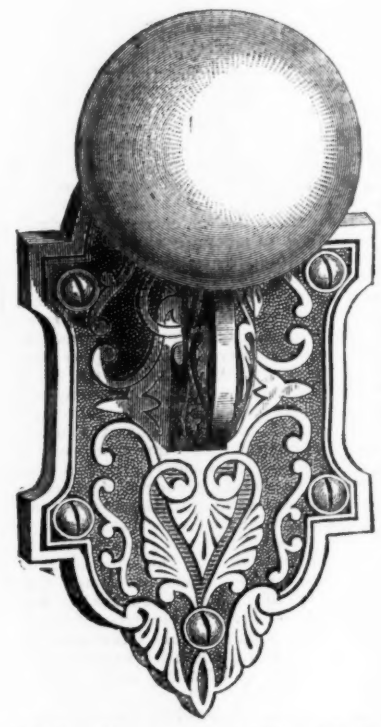
We also manufacture the Turnbull Patent Bell to be used with straight Pull.
Also crank Door Bells in various styles of finish to suit the wants of the trade.



No. 13, Copal Bronzed Lever, Porcelain Knob.
No. 15, Silver-Plated Lever Porcelain Knob.



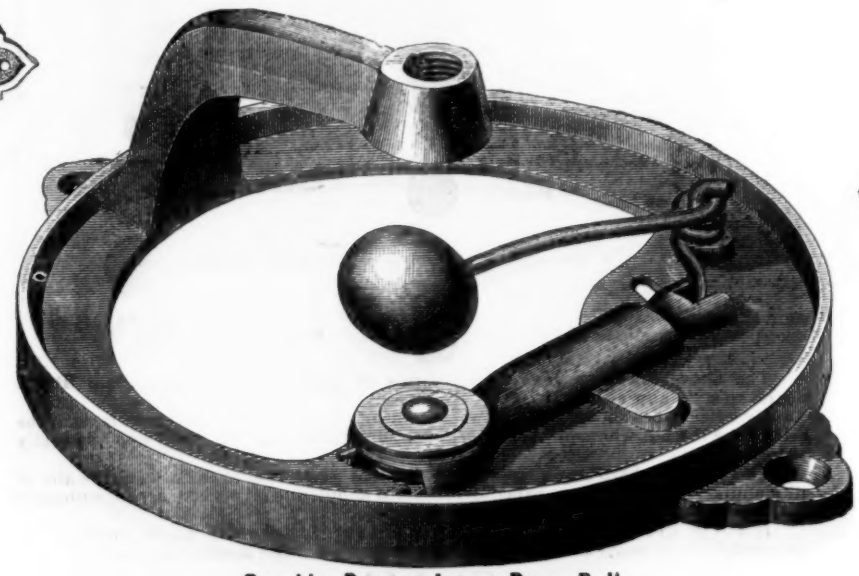
Turnbull Patent Door Bell, with No. 19 Lever.



No. 14, Copal Bronzed Lever, Porcelain Knob.
No. 16, Silver-Plated Lever, Porcelain Knob.

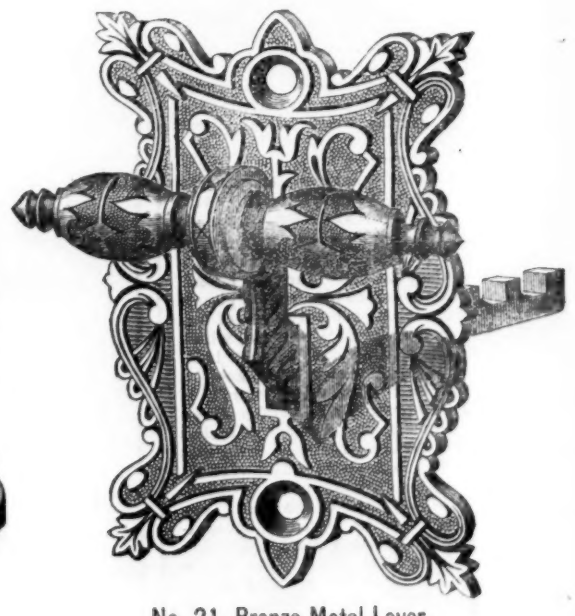
We furnish this Bell in Silver or Nickel-Plated, Brass or Bronzed Bell Metal, 3½ and 5 inch.

No. 17, Silver-Plated Lever.
No. 17½, Nickel-Plated "
No. 20, Bronze Metal "



Spark's Patent Lever Door Bell.
View of Movement without Bell.

We furnish this Bell in Nickel-Plated Brass or Bronzed Bell Metal, 4 and 5 inch.



No. 21, Bronze Metal Lever.
No. 27, Silver-Plated "
No. 27½, Nickel-Plated "
No. 37, Copal Bronzed "

For further particul rs, see our Illustrated Catalogue.

[*Continued from page* 15.]

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	100.59

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Specific gravity	6.346
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Gold	7.36
Lead	4.81
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Ferric oxide	1.53
Iron pyrites	.88
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Deducting silica, pyrites and oxide of iron as before, we have:

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Lead	5.746
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Altaite (Pb Te.)	9.298
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Silver	4.03
Zinc	.31
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Cobalt and Lead	traces
Total	99.59

Deducting silica, oxide of iron and alumina, and assuming the small amount of zinc to be combined with tellurium, we have:

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What is supposed to have been the first blast furnace built in the State was erected in 1762 at Lakeville (then called Furnace Village), where since 1748 a forge had been worked. The Lakeville furnace was built by John Haseltine, Samuel Forbes and Ethan Allen, and was sold in 1768 to Richard Smith, who, being a royalist, returned to England. The State took possession, and Col. Joshua Porter made there for the general government large quantities of cannon shot and shell, chiefly intended for the navy. Thus the Constellation and the Constitution were supplied with Salisbury cannon.

This property, as well as the forge and blast furnace at Mt. Riga, was long worked by Messrs. Holley and Coffing. The forge at Mt. Riga was built in 1786 by Abner or Peter Allen. Seth King and John Kelsey in 1806 commenced building the blast furnace, but it was not till 1810 that it was completed by Messrs. Coffing and Holley. These works and those at Lakeville were abandoned many years ago.

Two furnaces were built at East Canaan for Salisbury ores—one about 1840 by Samuel Forbes and one in 1847 by John A. Beckley. The first foundry was built at Lime Rock in 1830, and soon came under control of Milo Barnum, who produced small work chiefly.

In 1840 the foundry made the first railroad work, chairs for the Boston and Albany Railroad, then building from Springfield to Albany. The manufacture of cast chilled car wheels naturally followed, for which purpose the iron has held, and still holds, the reputation of being the best known.

The Barnum Richardson Co., organized in May, 1864, owned besides, at the time of its incorporation, the Beckley and Forbes furnaces at East Canaan and a foundry in Chicago. In 1870 they built a new foundry at Lime Rock, in 1872 an improved furnace at East Canaan, and in 1873 a new foundry at Chicago, making the capacity of the works there 300 wheels per day.

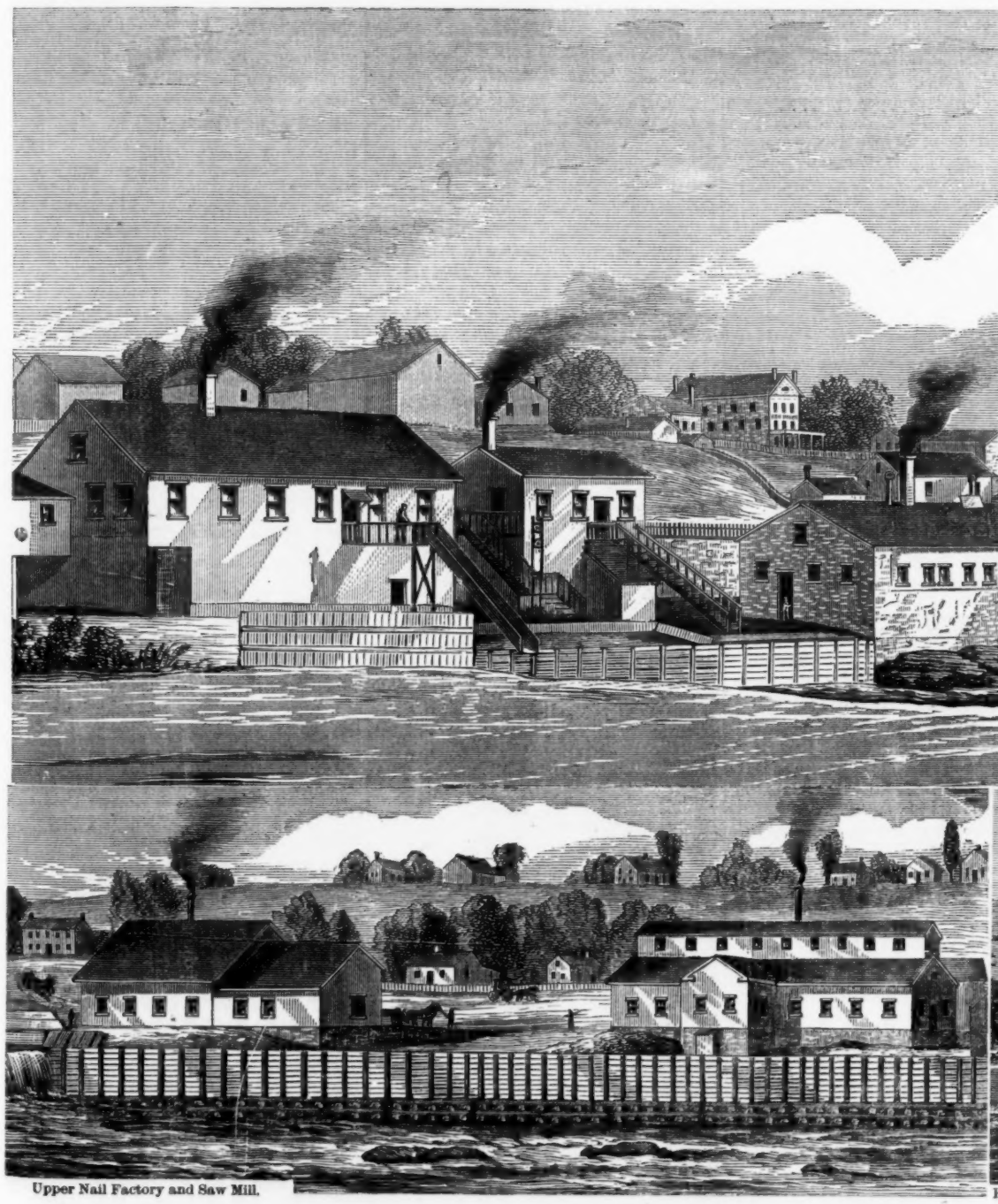
The 8 blast furnaces now owned by the company each use an average of 1200 bushels of charcoal and produce 11 tons of iron per day, while the furnaces running in 1840 consumed 600 bushels of charcoal each and made three tons of pig iron per day each.

The most advantageous blast known to have been made in a blast furnace of its size was made by the new furnace at East Canaan at its last blast, the average being 80 tons of iron per week.

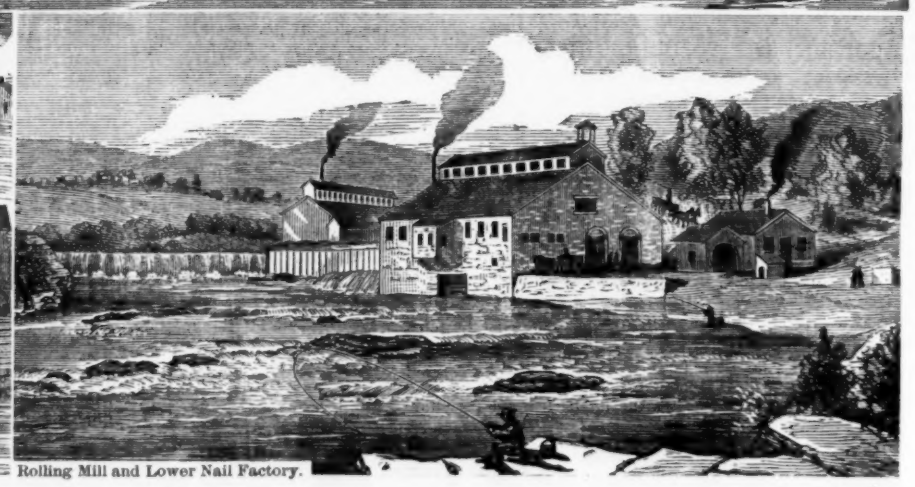
The Salisbury pig iron shows an average tensile strength of about 30,000 lbs. to the square inch. It is valuable for ordnance, railway purposes, malleable and machinery use.

The opening of the Connecticut Western Railroad has brought these mines and furnaces within easier access of each other, and has enabled the furnaces to procure a a portion of their supply of charcoal from a distance, most of it being brought from Vermont.

Fac-Simile of the Centennial Medal awarded by the United States Commission at the Exhibition held in Philadelphia, 1876, to the Ausable Horse Nail Co.



Upper Nail Factory and Saw Mill.



Rolling Mill and Lower Nail Factory.

View of the Factories of the

AUSABLE HORSE NAIL COMPANY,

MANUFACTURERS OF

HOT FORGED HORSE NAILS.

ABRAHAM BUSSING, Secretary.

OFFICE AND WAREROOMS, - - - 35 Chambers Street, New York.

The nails manufactured by the Ausable Horse Nail Company are forged from the best Norway Nail Rods while the Iron is at a welding heat; they are then brought to a perfect finish, ready for driving, by hammering when cold. This process gives the nails just the required stiffness, and renders them as tough as the best hand-made nails. Quality fully guaranteed. For Sale by all leading Iron and Hardware houses.

[*Continued from page* 15.]

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These mines, though steadily worked, still have an abundant supply, and are called upon only to raise enough to suit the wants of the vicinity. The ores, all similar in character, are brown hamatites, yielding 45 per cent. of iron. In the last 20 years extracting and washing the ores by machinery have been improved. The Barnum Richardson Company are working mines very similar to those described at Amenia and Mt. Riga, on the New York and Harlem R. R.

The first forge in the vicinity was erected at Lime Rock by Thomas Lamb, in 1734. Later Messrs. Canfield & Robbins operated a forge and blast furnace on the same site, as well as a forge and blast furnace (built in 1812 by Leman Bradley), on the Housatonic River below Canaan Falls. In 1863 the Lime Rock property came into the hands of the present owners, who in 1864 built a new blast furnace.

What is supposed to have been the first blast furnace built in the State was erected in 1762 at Lakeville (then called Furnace Village), where since 1748 a forge had been worked. The Lakeville furnace was built by John Haseltine, Samuel Forbes and Ethan Allen, and was sold in 1768 to Richard Smith, who, being a royalist, returned to England. The State took possession, and Col. Joshua Porter made there for the general government large quantities of cannon shot and shell, chiefly intended for the navy. Thus the Constellation and the Constitution were supplied with Salisbury cannon.

This property, as well as the forge and blast furnace at Mt. Riga, was long worked by Messrs. Holley and Coffing. The forge at Mt. Riga was built in 1786 by Abner or Peter Allen. Seth King and John Kelsey in 1806 commenced building the blast furnace, but it was not till 1810 that it was completed by Messrs. Coffing and Holley. These works and those at Lakeville were abandoned many years ago.

Two furnaces were built at East Canaan for Salisbury ores—one about 1840 by Samuel Forbes and one in 1847 by John A. Beckley. The first foundry was built at Lime Rock in 1830, and soon came under control of Milo Barnum, who produced small work chiefly.

In 1840 the foundry made the first railroad work, chairs for the Boston and Albany Railroad, then building from Springfield to Albany. The manufacture of cast chilled car wheels naturally followed, for which purpose the iron has held, and still holds, the reputation of being the best known.

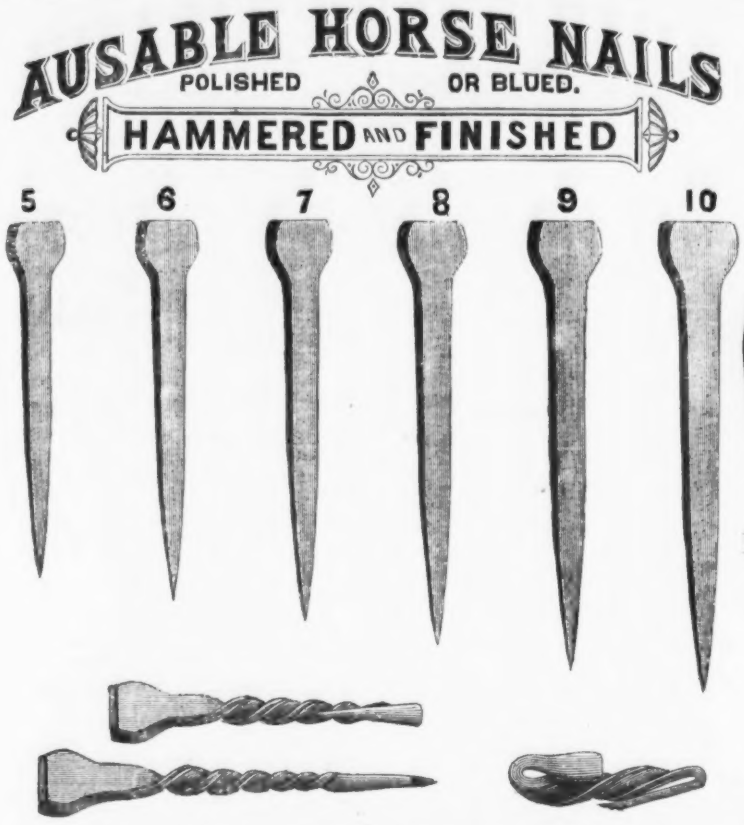
The Barnum Richardson Co., organized in May, 1864, owned besides, at the time of its incorporation, the Beckley and Forbes furnaces at East Canaan and a foundry in Chicago. In 1870 they built a new foundry at Lime Rock, in 1872 an improved furnace at East Canaan, and in 1873 a new foundry at Chicago, making the capacity of the works there 300 wheels per day.

The 8 blast furnaces now owned by the company each use an average of 1200 bushels of charcoal and produce 11 tons of iron per day, while the furnaces running in 1840 consumed 600 bushels of charcoal each and made three tons of pig iron per day each.

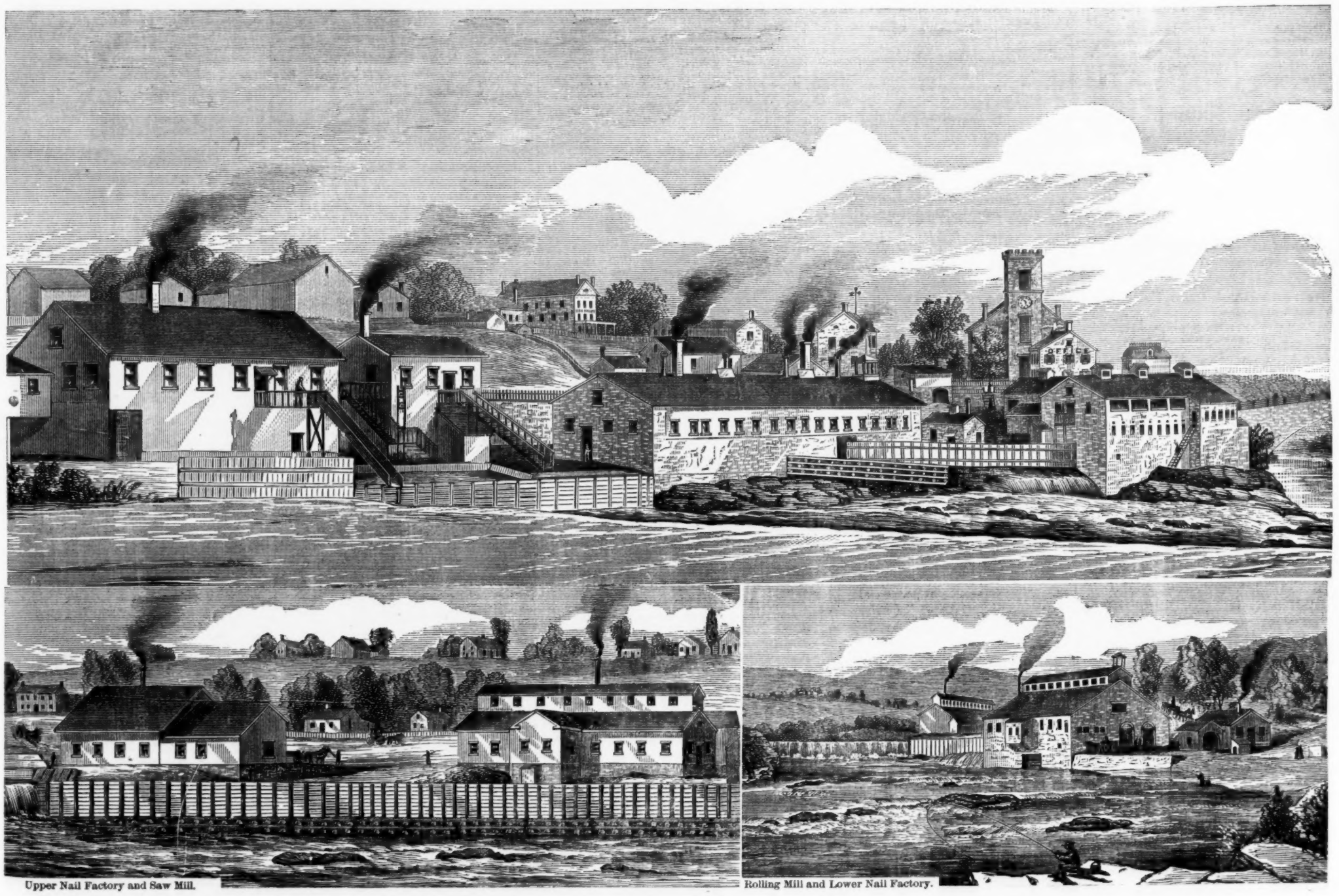
The most advantageous blast known to have been made in a blast furnace of its size was made by the new furnace at East Canaan at its last blast, the average being 80 tons of iron per week.

The Salisbury pig iron shows an average tensile strength of about 30,000 lbs. to the square inch. It is valuable for ordnance, railway purposes, malleable and machinery use.

The opening of the Connecticut Western Railroad has brought these mines and furnaces within easier access of each other, and has enabled the furnaces to procure a a portion of their supply of charcoal from a distance, most of it being brought from Vermont.



Fac-Simile of the Centennial Medal awarded by the United States Commission at the Exhibition held in Philadelphia, 1876, to the Ausable Horse Nail Co.



Upper Nail Factory and Saw Mill.

Rolling Mill and Lower Nail Factory.

View of the Factories of the

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ABRAHAM BUSSING, Secretary.

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See page 17 of *The Iron Age*, of Oct. 25, 1877.

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PREFACE.

In ten years spent at molding and in the foundry business, and four years in traveling through the United States, in introducing a chemical flux for iron, I have seen the lack of regularity, and the bad effects of it, in the construction and management of foundry cupolas and furnaces, and the want of a guide or rule for their construction and management. At the earnest solicitation of many foundrymen, I have undertaken the publication of this small work, with a view of throwing some light upon the subject of melting iron, and the construction and management of cupolas and furnaces—a subject that always seems to be enshrouded in mystery.

All the theories that I have advanced in this work are from notes taken from practical observation while visiting different foundries, in the flux business, and from a chemical knowledge of the laws of combustion and heat, as well as of the laws of chemical affinity of one element for another. By giving a few explanations of causes and effect I hope to establish some regularity in the melting of iron for foundry purposes.

I have also added a few recipes for the forming of alloys, and a general description of all the metals, minerals and gases used in the art of founding, as well as their application, all of which I have endeavored to place before the reader, clothed in popular language, so that all who can read may fully understand this interesting subject; for this reason, I have endeavored to avoid using any of the chemical and technical terms which are usually applied to this subject, as they often have a tendency to embarras, rather than to enlighted, the reader.

The Author.

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The Metallurgical Review for November contains 104 pages of exceptionally interesting and valuable matter, with illustrations of superior excellence. Among the more important articles are the following:

Prof. W. M. Williams' paper, entitled "A Theory of Steel," is a synopsis of the conclusions reached after a careful examination of the chemical and physical properties of iron and steel. It advances a new view of the relations of iron and carbon in alloy, and will be read with peculiar interest by all who have followed the discussion which has been going on for some years past as to the proper definition of steel.

Mr. J. G. Murphy's paper on "Blast Furnace Records," gives a scheme for a complete system of blast furnace book-keeping, based upon the method taught by Prof. Thomas Egleston at the School of Mines, Columbia College, N. Y. It presents in a manner easily understood, the complete working of a furnace, and shows exactly the relation between the determinations in the laboratory, and the product in the casting-house.

Mr. W. F. Durfee's paper, on "Forgings at the Centennial Exhibition," is a careful and intelligent examination of the products of the several nations in this department of iron-working, for which the writer, an experienced ironmaster, and judge of the group including iron forging, enjoyed peculiar facilities.

Mr. C. Kirchhoff's paper, on "Desilverizing Lead," records an interesting and important experiment made at the Delaware Lead Works, Philadelphia, to desilverize lead without previous refining to remove the antimony and arsenic.

Mr. Wm. Metcalf's paper, on the "Effect of Heat on the Structure of Steel," is of great practical value, and is illustrated by a double-page plate which shows in the clearest and most striking manner the grain of steel at the point of fracture. The paper is full of valuable suggestions to consumers of steel on heat-ing and tempering, the restoration of "burnt" steel, &c.

Professor R. H. Thurston's paper, on the "Mechanical Treatment of Metals," concludes the valuable series begun in the September issue.

Mr. Edmund C. Pechin's article, on "The New Iron District of Ohio," concludes his exhaustive discussion of the claims of this region to recognition as a future great center of iron production. In this paper Mr. Pechin treats principally of the ores, and his conclusions, reached after a careful examination of the whole field, will not be reassuring to those who have invested in furnace plants. His discussion of the ore deposits of the district is very thorough, and with a desire to take the most favorable view of the ore resources of the section consistent with truth, he does not hesitate to state the facts. He thinks the Bessemer ores of this district will especially disappoint the expectations which have been based upon them; and concludes after careful survey that a very close examination of all the conditions affecting success should precede the investment of a single dollar in plant.

D. K. Tchernoff's "Notes on the Manufacture of Bessemer Steel," is a continuation of the paper begun in our October issue. This is pronounced by high authorities the most complete and valuable study of the Bessemer process ever made, and the reputation of the author as a metallurgical engineer has long been recognized in this country.

Mr. A. C. Kirk's paper on "The Effect of Punching on Iron and Steel Plates," is a practical examination of the physical changes produced in iron and steel by punching, with illustrations.

Besides the above, there are many short articles of interest and value, named in the contents, which note whatever is of current interest in metallurgical science at home and abroad.

The favor with which *The Metallurgical Review* has been received, shows that it has entered upon a life of great and permanent usefulness, and the arrangements already made by its conductors give promise that its monthly issues will be found to possess a steadily increasing interest and value.

Trade Report.

Office of THE IRON AGE,
WEDNESDAY EVENING, Oct. 31, 1877.

During the past week Wall street has been without feature of general interest, and the Exchange has been wholly under the control of speculative cliques. The money market has become more easy, owing to the lessened drain of currency to the West and the receipts from other cities, which have more than made up the demand of the South for currency to move the cotton crop. The sales on call loans have declined from 6 @ 7 to 5 @ 6 per cent. and lower. The rate of discount on prime business paper has ranged from 6½ to 9 per cent.

The gold market has witnessed no important changes, and the premium has ranged under 102⅞. The following table shows the highest and lowest daily quotations since our last report:

	Highest.	Lowest.
Thursday	102¾	102¾
Friday	102¾	102¾
Saturday	102¾	102⅝
Monday	102¾	102⅝
Tuesday	102¾	102⅝
Wednesday	102⅞	102⅜

Government bonds have been firm but without important feature. State bonds are dull, but as the rule strong. Railway mortgages are fairly active, and are quoted somewhat higher. We give below the closing quotations of United States bonds.

In the stock market there has been some speculative activity, but the market has been uneven, and in the main heavy. The principal transactions have been in New York Central, Lake Shore, Western Union, Delaware, Lackawanna and Western, Northwestern, St. Paul and Michigan Central. Much interest is manifested on the street in a plan for the reorganization of the Central Railroad of New Jersey, which may be briefly described as follows: The time for payment of the floating debt is to be extended to 1880, both principal and interest to be paid in 12 installments. The holders of the second mortgage bonds are to receive for two years' interest preferred stock to the amount of $2,800,000, being 7 per cent. on $20,000,000 of bonds, the stockholders to pay an assessment of $10 per share, for which they are to receive preferred stock to the amount of $2,000,000, and 10 per cent. of the present capital stock is to be converted into preferred stock—$2,000,000. The plan will not result in a return to the Lehigh Navigation Company of its canals and railroads.

The bank statement shows an increase in the total reserve of $88,300—the difference between a gain of $802,500 in the specie average and a loss of $714,200 in the legal tender note average. By reason of the reduction of deposit liabilities, the surplus reserve gained $516,600, and is now $8,095,325. The following is a comparison of the bank aggregate averages for the past two weeks:

	Oct. 20.	Oct. 27.	Differences.
Loans	$238,183,800	$236,287,400	Dec. $1,896,400
Specie	16,519,900	17,322,400	Inc. 802,500
Legal t'nd'rs	39,949,300	39,235,100	Dec. 714,200
Deposits	195,561,500	193,848,700	Dec. 1,712,800
Circulation	16,230,300	16,726,000	Inc. 495,700

The foreign trade movement for the week is shown in the following tables:

IMPORTS.

For week ended Oct. 27:

	1875.	1876.	1877.
Total for week	$5,130,887	$2,901,027	$4,873,773
Prev. reported	277,717,660	234,906,209	226,061,927
Since Jan. 1	$282,848,547	$237,807,206	$230,935,700

Included in the imports of general merchandise were articles valued as follows:

	Quantity.	Value.
Anvils	176	$1,517
Brass goods	9	2,586
Bronzes	13	5,188
Chains and Anchors	1	90
Copper	..	734
Cutlery	44	16,999
Guns	23	6,439
Hardware	2	86
Iron, pig, tons	600	9,466
Iron, sheet, tons	13	1,308
Iron, other, tons	876	27,383
Lead, pigs	798	4,557
Metal goods	77	11,233
Nails	6	2,260
Needles	98	11,006
Old Metal	..	1,217
Per. caps	16	2,191
Saddlery	1	370
Steel	1,098	11,181
Silverware	2	162
Tin, bxs.	26,180	137,284
Tin, 2,720 slabs	138,422	20,780
Wire	7	1,811

EXPORTS, EXCLUSIVE OF SPECIE.

For week ended Oct. 30:

	1875.	1876.	1877.
For the week	$5,893,917	$6,901,516	$7,808,369
Prev. reported	206,168,442	218,734,448	235,445,197
Since Jan. 1	$212,062,359	$225,635,964	$243,253,566

EXPORTS OF SPECIE.

For week ended Oct. 27:

Total for the week	$248,780
Previously reported	23,513,326
Total since Jan. 1, 1877	$23,792,106
Same time in 1876	41,485,204
Same time in 1875	67,031,774
Same time in 1874	44,034,712
Same time in 1873	43,736,183
Same time in 1872	62,276,907

Government bonds close as follows:

	Bid.	Asked.
U. S. Currency 6's	121	121¼
U. S. 6's 1881 registered	110⅛	110¼
U. S. 6's 1881 coupon	110⅛	110¼
U. S. 6's 1865 new reg	105⅛	105⅛
U. S. 6's 1865 cou	105⅛	105⅛
U. S. 6's 1867 reg	108¼	108⅛
U. S. 6's 1867 cou	108⅜	108½
U. S. 6's 1868 reg	109¾	110
U. S. 6's 1868 cou	109¾	110
U. S. 10-40 reg	107⅝	107¾
U. S. 10-40 coupon	108¼	108¼
U. S. 5s 1881 registered	106¾	107
U. S. 5s 1881 coupon	107⅛	108
U. S. 4½s 1891 registered	105¼	105⅜
U. S. 4½s 1891 coupon	105¼	105⅜
U. S. 4s 1907 registered	102¼	102⅜
U. S. 4s 1907 coupon	102½	102¾

The following are the closing quotations of active shares:

	Bid.	Asked.
Atlantic and Pacific Telegraph	19¾	20¼
Chicago and Northwest	34⅜	35⅛
" " Pref.	63¾	63⅞
Chicago, Rock Island and Pacific	100⅞	..
Chicago, Bur. and Quincy	102¼	103
Clev., Col., Cin. and Ind	41	41¼
Cleveland and Pittsburgh	73	74
Chicago and Alton	78	79
Chicago and Alton Pref.	102	..
Consolidation Coal	20	..
Canton	20	25
Delaware, Lack. and Western	50⅛	50¼
Delaware and Hudson Canal	45½	46
Express—Adams	97	98
" American	53	53¾
" United States	44	44¾
" Wells, Fargo & Co	86	87
*Erie	12	12⅛
Harlem	142	144
Hannibal and St. Joseph	12	12½
" " Pref	26¾	27½
Illinois Central	73¾	74
Lake Shore	68⅛	68¼
Michigan Central	63¾	64
Morris and Essex	75	75¼
Milwaukee and St. Paul	33	33¼
" " Pref	67	67¼
Mariposa	1⅜	1¾
" Pref	1⅝	2½
New York Central	106⅛	106¼
New Jersey Central	15¾	16
New Jersey Southern	1⅛	1⅜
Ohio and Mississippi	9	9⅛
" " Pref	9	14½
Pacific Mail	23½	23¾
Panama	..	128
Pittsburgh and Fort Wayne	85	89
Pacific of Missouri	1⅞	2⅛
Quicksilver	16½	18
" Pref	35	36
St. Louis Kansas City Northern	4½	4¾
" " Pref.	24¾	25
Toledo, Wabash and Western	15	15⅛
Union Pacific	67⅛	67⅜
Western Union Telegraph	80¾	80⅞

* Ex. dividend.

MINING STOCKS.

Mr. Ogden Haight, No. 65 Wall street, sends us the following report of the business of the New York Mining Stock Exchange for the week ending Oct. 31:

	Closing Quotations, in Currency.	Shares Sold.
Alpha	12.12½	....
American	4.00	10,200
American Flag	.13	19,700
Belcher	5.00	....
Bertha & Edith	.05	14,550
Best & Belcher	16.25	....
Bullion	4.75	....
Caledonia	2.12½	....
California	27.50	....
Chollar Potosi	28.37½	....
Cleveland	7.00	....
Consolidated Imperial	1.00	....
Consolidated Virginia	26.00	....
Confidence	5.25	....
Crown Point	4.75	....
Eureka	46.25	....
Exchequer	5.25	....
Gould & Curry	7.87½	....
Granville	.26	1,200
Hale & Norcross	5.00	....
Hukill	4.25	1,800
Julia Consolidated	2.12½	....
Justice	8.87½	....
Kentuck	6.87½	....
Lacrosse	.30	15,000
Leopard	1.00	....
Lucerne	.18	3,300
*Mariposa	....	....
*Mariposa Preferred	....	....
Mexican	9.12½	....
Moose	6.62½	12,300
New York and Colorado	1.87½	3,400
Northern Belle	16.25	....
Ontario	23.75	1,300
Ophir	13.12½	....
Overman	16.00	....
*Quicksilver	....	....
*Quicksilver Preferred	....	....
Raymond & Ely	7.87½	....
St. Joseph Lead.....offered at	5.00	....
Savage	8.37½	....
Seaton	1.40	1,000
Segregated Belcher	26.25	....
Sierra Nevada	3.62½	....
Silver Hill	1.87½	....
Union Consolidated	8.50	....
Yellow Jacket	8.62½	....

* Sold at New York Stock Exchange.

Our operations continue to be confined mostly to Colorado stocks. More real dealing in Californias is, however, noticeable, though omitted from our list of sales. The difficulty is in getting certificates here. The stock of the American Mining Co., of Sunshine, Colorado, was called for the first time yesterday. The capital stock is $1,000,000, in shares of $10. The company own the American and Ajax lodes, in the center of the tellurium belt, Boulder county. The stock rose rapidly from $3.50 to $4, the closing price. It promises to become very active. American Flag continues to show some activity, some sales having been made at 15c., closing at 13c. Bertha and Edith sold from 8c. down to 5c. per share. Granville is controlled by the owners of Bertha and Edith. Hukill declined from $4.50 to $4.25, from no known reason. Lacrosse is dull at 30c. to 31c. Moose opened at $6.12½ and closed at $6.62½. Ontario closes at $23.75. Seaton opened at $1.05 and closed at $1.40. Gen. J. F. L. Vinton, formerly of the Colorado College School of Mines, is now superintendent of this property.

GENERAL HARDWARE.

Considerable improvement in the demand for Hardware is reported this week. In regard to prices no changes of any importance have occurred. The demand for Foreign Hardware is good, considering the season, and some fair sized orders for spring importation have been placed during the week.

Hermann Boker & Co. have been appointed agents for Peugeot's Horse Clippers, which they quote at $3 each, currency. These goods are similar in construction to Clark's Clipper, but are stronger.

Fernald & Sise have been appointed sole agents in this city for S. H. & E. Y. Moore, Chicago, Ill., and will carry in stock at their warehouse, No. 100 Chambers street, a full assortment of their specialties, viz., "Climax" Barn Door Hangers, "Acme" Barn Door Rollers, Moore's Anti-Friction Sliding Door Sheaves, Parlor Door Hangers, Dumb Waiter Pulleys, &c. In the advertisement of S. H. & E. Y. Moore, on page 29, illustrations of some of these goods are presented.

The Russell & Erwin Mfg. Co. have issued some extra pages for insertion in their illustrated catalogue, showing their new patterns of "Secure Lever" Chest, Drawer and Wardrobe Locks.

There is no change to notice in the condition of the Nail market, and we continue to quote 10d $2.50, less 10 cents per keg to the trade.

Peck & Snyder, No. 124 Nassau street, have issued a revised price list for their Self-adjusting Club and other styles of Skates, which we print below. The regular trade discount on Club and Wood Top Skates is 25 per cent.; those goods marked "Job Lots" are net. Purchasers of 50 pairs of Club Skates during the season will be entitled to an extra or quantity discount.

Peck & Snyder's Patent Self-adjusting American Club Skate.

No. 1, sizes, 8 to 11½ inches. Blued Steel Foot Plates and Clamps, with the best tempered runner, and polished blades. Price per pair $5.00
No. 2, same as No. 1, only full Nickel-plated. Price per pair 6.00
No. 3, full polished and bright finished throughout, and Nickel-plated. Price per pair 7.00

Peck & Snyder's "Clipper" or N. Y. Club Skate.

No. 1, sizes 8 to 11½ inches. Price per pair ... $3.00
No. 2, same as No. 1, only full Nickel-plated. Price per pair 4.00
No. 3, full plated and bright finished throughout and full Nickel-plated. Price per pair ... 5.00

All Clamp Club Skates.

All Clamp A. C., lengths 8 to 12 inches, blades made of best imported steel extra tempered, blued steel sole and heel plates, double-acting heel and toe clamps, warranted in all its parts. Price per pair $4.00
All Clamp X. L., lengths 8 to 12 inches, polished blades, japanned steel sole and heel plates, double-acting heel and toe clamps. The cheapest all clamp Club Skates. Price per pair $2.50

New York Club Skates.

Sizes, 7 to 11½ Inches—Broad Strap Club, E. Japan'd Steel Tops, Heel Plates and Screws, Strapped complete. Price per pair $1.00
H. Lengths, 7½ to 11¼ inches. Japanned Steel Tops, Double-acting Toe Clamps, Heel Plates and Screws. Price per pair 1.50

Job Lot 2574 pair Strapped Club Skates.

Sizes in Stock.

25 pair	50	110	124	200	260	425	450	600	330
7 inch.	7½	8	8½	9	9½	10	10½	11	11½

Price per pair, net ..... 50c.

The Sheffield Strapped Club—Job Lot, 129 pair.

Sizes in Stock:	½	3 pair,	4	17	10	25	45	25
	½	8 inch,	8½	9	9½	10	10½	11

Solid Runners, full plated, Blades and Tops, with best Broad Toe Straps and Heel Buttons. Complete. Per pair, net $1.00
93 pair Job Lot No. 65, Men's Solid Runners, Ebony Top, Brass or German Silver mounted.

Sizes in stock:	½	4 pair,	2	24	22	41
	½	8 inch,	8½	9	10	10½

Price per pair, net 1.00

Winslow's Wood Top Skates.—New Pattern.

Half Rocker, No. 95, sizes, 7 to 11 inches. Price per pair $0.65
Half Rocker, No. 100, sizes, 7½ to 10½ inches. Price per pair ..... .85
Rocker, No. 140, sizes, 8 to 11 inches. Price per pair 1.00

Winslow's Solid Runner Skates.

Half Rocker, No. 200, sizes, 7 to 11 inches. Price per pair ..... .90
Half Rocker, No. 245, sizes, 8 to 11 inches. Varnished Beech Woods, Solid Runners, fastened in a secure manner to the woods by a brass thimble—a device which ingeniously and effectually prevents the breaking or splitting of the woods. Heel Screw. Price per pair 1.25
Rocker, No. 250, sizes, 8 to 11 inches. Varnished Beech Woods, Solid Runners, finished in same manner, and fastened with Brass Thimbles, as in No. 245. Price per pair 1.25

Winslow's Ladies' Skates.

No. 220, sizes, 7 to 10 inches. Price, with Straps, per pair 1.25
Ladies' Skate, New Pattern, No. 270, sizes, 7½ to 10 inches. Price, with Straps, per pair .. 1.50
Ladies' Standard, Frame, Steel Blades, No. 274, lengths, 7 to 10 inches. French Polished Beech Woods, Strapped complete, with Brass Heel Pieces, and Mortised Toe Straps, Patent Buckles, Black Leather Trimmings. Price, with Straps, per pair ... 2.25
Ladies' Frame, Standard, Steel Blades, No. 280, lengths, 7 to 10 inches. French polished Beech Woods, Strapped complete, with Silver-plated Heel Bands and Mortised Broad Toe Straps, Patent Buckles, Black or Russet Leather Trimmings. Price per pair 2.50

Ladies' Rink Skate.

No. 382, sizes, 8 to 10 inches. Cast Steel Runners, Polished Beech Woods, Black or Russet Leather Straps, Patent Buckles. Price, with straps, per pair 3.00
No. 384, sizes, 8 to 10 inches. Ebony Woods, Silver Trimmings, Black or Russet Leather Straps, same style as No. 382. Price, with straps, per pair 3.50
Ladies' Standard, Frame, Steel Blades, No. 272, sizes, 7 to 10 inches. French Polished Beech Woods, Strapped complete, with Brass Heel Pieces and Mortised Broad Toe Straps, Black Leather Trimmings, Runners either grooved or flat. Price, with straps, per pair 2.00

Shoots, Vinton & Co., Horseheads, N. Y., invite the attention of the trade to their Wooden Water Pipe. They manufacture all kinds of Chain Pump Tubing, and claim for their Tubes superiority in smoothness of bore over any similar goods in the market. Their Boring Machine was patented in July last, and they say of it: "It will bore and at the same time plane the orifice so that it is perfectly smooth, which is a decided advantage, particularly in Tubing for Chain Pumps, which heretofore had to be burned out in order to get them sufficiently smooth to allow the chain to work." Their advertisement will be found on page 26.

We have received the following circular:

PITTSBURGH, Oct. 25, 1877.

Since the issue of my last circular prices have ruled very low, and parties desiring to purchase will do well to stock up, and I quote the market about as follows:

Iron, assorted orders, 1¾ rates.
Nails, assorted orders, 2.15 rates for 10d.
Sheet Iron, light gauges, 2.90 rates for No. 24 as a basis.
Plate Iron, ¼, 3-16 and ¼ in. thick, 2½c. per lb.
Tool Steel, 11½c. per lb.
Machinery Steel, 7½c. per lb.
Tire Steel, 4½c. per lb.
Window Glass, 70 and 5 per cent. discount from list.
Borax, ref., in cases, 100 lbs., 10½.
Borax, ref., in barrels, 300 lbs., 9.
Babbit Metal, 7 to 50c. per lb., according to quality.

The above prices are 60 days, or 2 per cent. for cash.

I would call the attention of the trade regarding Nails, and the difference between Nails picked by Coyne's Patent Automatic Nail Picker and Nails not picked at all, or pretending to be picked by hand, sifters or other devices not attached to the Nail Machines. The Coyne Picker is the only device, attached directly to the Nail Machine, and insures the uniformity in size, weight and quality by testing each Nail as it is made and rejecting all that are imperfect, thus insuring to the consumer from 3 to 5 pounds more Nails in each keg, instead of that amount of worthless scrap. Nails cannot be picked wholesale or by hand, or sifters, screens and tumblers. What is worth doing at all is worth doing well. A few sizes, any brand, that is said to be picked, only works to the detriment of the merchant. As all sizes should be clean and picked, and this can only be done by the Coyne Machine, the ridiculous attempt to pick Nails by hand, or sifters, is out of the question, and cannot be done. The trade and consumers know what they get, and what they have heretofore gotten, and appreciate a Coyne Machine Picked Nail. In order to secure these advantages, see that the Nails you buy are branded or labeled, "Assorted by Coyne's Patent."

Always ask for Coyne's Machine Picked Nails. Special prices given on application. Soliciting a share of your patronage, I remain, Yours truly, A. G. HATRY.

E. T. Barnum, Detroit, Mich., invites the attention of the trade to his large assortment of Wire Flower Pot Stands, Wire Fire Guards, &c. He is prepared to furnish in various designs Wrought Iron Fencing, Wire Counter Railing for Banking and other offices, Iron Bedsteads, &c.; he quotes Heavy Wire Cloth for Locomotives, Mining and other purposes at 9c. per pound, net; Wire Flower Pot stands discount 35 per cent. from list, and Wire Fire Guards, $15 per dozen. His advertisement will be found on the 2d page.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

WEDNESDAY, Oct. 31, 1877.

Scotch Pig.—There is but little demand, and prices are weaker. The following are makers' quotations:

Coltness No. 1	65/6
Glengarnock No. 1	58/6
Eglinton No. 1	54/

Manufactured Iron and **Rails** without anything special to report.

IRON.

American Pig.—The near approach to the close of navigation has had a stimulating effect on buyers, and a good many fair-sized orders for prompt delivery have been placed during the week. Sales in lots are reported of 500 tons No. 1 X at $19 @ $20; 150 tons No. 2 X at $18, and 1000 tons Gray Forge on private terms. Quotations are unaltered, and good Lehigh brands are firm. We quote: Foundry No. 1, $18 @ $19; Foundry No. 2, $17 @ $18; Gray Forge, $16 @ $17.

Scotch Pig.—We hear of no arrivals of Scotch Iron at this port during the week. Sales in small lots are reported of 100 tons Glengarnock, 75 tons Coltness and 50 tons Eglinton. We quote: Coltness, $26 @ $26.50; Eglinton, $24; and Glengarnock, $25.

Rails.—The transactions in Steel Rails during the week have been heavy; besides some large contracts known to be closed, the particulars of which have not transpired, we hear of a sale of 12,000 tons on private terms, and in addition 1210 tons for the new Coney Island Railroad, to be delivered at Bay Ridge, Brooklyn, at $41.60. We quote Steel, nominally, $42 @ $45; and Iron, $33 @ $37.

Old Rails.—We hear of some inquiry and the sale of 4000 tons on private terms. We quote, as before, $18 @ $19.

Scrap.—In Scrap Iron nothing has transpired. We quote, as before, $22 @ $23.

METALS.

Copper.—The market has remained very quiet; there is nothing pressing for sale, while on the other hand little is needed. Sales during the week have been restricted to between 150,000 and 200,000 pounds Lake Superior at 17¾c., at which figure the market closes dull. Baltimore we quote nominally 17¾c. @ 18c. Futures of Lake Copper may be quoted 18c. @ 18¼c., nominally. The London telegram quotes Best Selected, £72 and Chili Bars, £65. 10/, which shows another slight drop of 10/ in both. They report from England by the last mail, dated October 18, as follows: "Copper is very quiet, the general quotation being—Tough Ingots, £73; Best Selected, £74, and Manufactured, £78." The manufactures of Copper and Yellow Metal continue in moderate demand at former prices. We quote: New Sheathing, 28c.; and Bolts and Braziers, 30c.; Yellow Metal Sheathing, 20c.; Yellow Metal Bolts, 25c.; and Nails, 20c., all net cash.

Tin.—Our market remains firm, stimulated by higher foreign advices. London (as per cable) has advanced to £70 for Straits, and Singapore to $20 per picul; Exchange, 4/. Since our last report 50 tons Straits Tin have been sold here for December arrival at 15½c., gold. On the spot we quote large lines, in gold, as follows: Straits, 16¼c.; English Refined, 15¾c. @ 15⅞c.; do. Common, 15⅜c. @ 15½c., and Banca, 18c. @ 18¼c. By mail from England, dated October 18, we have the following: "Holders report they are making sales at present prices, but the presumption is these are limited to small lots wanted for immediate use. Quotations to-day are: L. and F., £73; Bar, £75, and Straits, £68." We shall know in a few days by cable what the deliveries during the current months have been in England and Holland, furthermore the London stock. Should these statistics prove favorable, the market over there may take a fresh start. The advance thus far, though considerable, has not been precipitate—a circumstance calculated to inspire confidence in the present upward movement. *Tin Plates.*—There has been but a moderate amount of business done, both in England and here, during the week, but there, as well as here, all Ternes are in an exceptionally favorable position, on account of their extreme scarcity. We quote, gold, per box, ordinary brands, large lots, as follows: Charcoal Bright, $6.50 @ $6.62½; ditto Ternes, $6.12½ @ $6.25; Coke Tin, $5.62½ @ $5.75; and ditto Ternes, $5.37½ @ $5.50. They write from Liverpool, under date of Oct. 18, to the following effect: "The position has not changed in any respect, either as regards the market as a whole or as regards the various kinds. Several further sales have been made at very low figures, and the feeling strongly is that rates will be lower still."

Lead.—Quite a favorable reaction has sprung up in this market since our last, the general view apparently being that Lead had been allowed to drop too low. A gradual decline, as we have witnessed it, from 6¼c., currency, to 4¼c., currency, naturally led to a good deal of inquiry, and the conclusion seems to have been reached that this was overdoing the thing, even admitting that production be as large this year as it is represented to be. The late speculative purchases already plainly indicated that the leading operators had confidence in the metal at the low price it had been depressed to, and they are supposed to be well informed, since they make Lead a specialty, and seldom make a mistake when they take hold of it. Holders are now quite firm, and after a sale of 200 tons, in lots, at 4.50c. @ 4.55c., currency, the outside figure is now firmly insisted upon by them. Bids for considerable lots have been made at 4½c., currency, but declined. The metal is now in as good a position as could have been expected under the circumstances, and there is every prospect that prices may gradually appreciate still further, should dealers and consumers at length take courage and replenish their exhausted supplies instead of waiting till their necessities force them into the market and compel them to buy on still more unfavorable terms. Lead for corroding purposes has improved at St. Louis to 4¼c., currency, equal to 4¾c., currency, here. From Liverpool they write, under date of Oct. 18, as follows: "Lead is duller in tone, but there is no material change yet in prices, which are: English Pig, £20. 2/6 to £20. 5/; Sheet, £21. 5/." Manufactured is in fair demand at unchanged prices. We quote: Bar, 7c.; Pipe, 7½c.; Sheet, 8c.; and Tin-Lined Lead Pipe, 15c.; all less 10 per cent. to the trade.

Spelter and Zinc.—Nothing of special interest has transpired in common Domestic Spelter, which remains steady at 5⅞c. @ 6⅛c., currency, as to brand, with a moderate business transacting, while Foreign, as heretofore, remains nominal at 6½c., gold, for Silesian. From Europe no important advices relating to this metal have come to hand. *Sheet Zinc.*—Sheet is very quiet, but prices are unaltered. We quote: Mosselmann, 8c. @ 8½c., gold, and Domestic, 7⅜c. @ 7½c., currency.

Nickel—Is unchanged at $1.65 @ $1.85, gold, according to brand. News has reached us from Malaga, Spain, that discoveries of Nickel have been made in that neighborhood of great promise, the more so as this Andalusian Nickel, upon numerous assays made, proves to be free from the many impurities which are contained in New Caledonian ore and to some extent militate against it.

Antimony—Continues scarce. There is all along a good inquiry, and it is easy to obtain 12¼c. @ 13½c., gold, for it, according to brand and quantity.

COAL.

The market at the present time is certainly a very favorable one for consumers. The quotations for all kinds of coal are very low, so low, in fact, that it is very currently reported that the margin between the cost and the price has been almost extinguished. Consumers are coming in and buying freely, which keeps the market firm, while an abundant supply and sharp competition prevents any advance. The quotations at the present time fairly represent the prices obtained for coal. If concessions are made, we think they are small and to cash buyers. Trade is brisk, buyers seeming to feel that but small changes are probable until the next sale, at least. Prices in some directions are this week below those of last. Thus we hear that Delaware and Hudson are quoting Lump, Steamer and Grate, $2.50; Egg, $2.65; Stove, $2.95; Chestnut, $2.80.

Mr. W. H. Meeker, 111 Broadway, quotes as follows for coal, f. o. b. at Hoboken:

	L'p.	St'r.	B'kn.	Egg.	Stove.	Ch't.
Lack. Valley.	$2.50	$2.50	$2.65	$2.70	$3.00	$2.60
Kingston	2.50	2.50	2.65	2.70	3.00	2.60
Ch'y, R. Ash	...	...	...	2.80	3.10	2.70
Wilkesb're	2.50	2.50	2.65	2.70	3.00	2.60
B. B. Lehigh	3.50	...	2.85	2.85	3.00	2.60

Messrs. A. Pardee & Co. have issued the following line prices at Mauch Chunk:

Lump, Broken and Egg	$2.25
Stove	2.35
Chestnut	2.15
Pea	1.00

Freights are considerably higher than they have been, and are feeling the effect of the increased volume of trade. The following quotations, given yesterday, will give an idea of the general rates:

Portland	$1.35
Portsmouth	1.50
Boston	1.40
Pawtucket	1.00
Providence	.90
New Haven	$0.70 to .75

Harbor rates are 45 cents.

OLD METALS, PAPER STOCK, &c.

The Old Metal market continues unchanged from the dullness previously reported. There is, however, a better feeling in connection with Lead, which is in good request, and has advanced ¼c. per pound. The market for Newspaper Stock and White Rags is improving, and dealers have disposed of a considerable portion of their accumulations. For any other class of stocks there is very little inquiry. Consumers are diffident about purchasing, and only present wants are considered.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper	per lb.	$0.13	@	$0.14
Yellow Metal	"	.10	@	....
Brass, heavy	"	.09½	@	....
Brass, light	"	.08½	@	....
Composition, heavy	"	.11½	@	....
Lead, solid	"	.03¼	@	....
Tea Lead	"	.03	@	....
Zinc	"	.03½	@	....
Pewter, No. 1	"	.11	@	....
Pewter, No. 2	"	.07	@	....
Spelter	"	.05½	@	....
Wrought Iron	per ton.	17.00	@	....
Light do	"	11.50	@	....
Stove Plate	"	9.50	@	....
Machinery do	"	12.00	@	....
Burned Iron	"	4.00	@	....

The prices current for Rags, &c., are as follows:

Canvas, Linen		3½c.	@	5 c.
" Cotton, No. 1		3½c.	@	....
" " No. 2		3½c.	@	....
White No. 1		4¼c.	@	....
" No. 2		3½c.	@	....
Colored do		2 c.	@	....
Mixed, Woolen		2 c.	@	3 c.
Soft, do		3½c.	@	6 c.
Gunny Bagging		3 c.	@	....
Jute Butts		2½c.	@	....
Kentucky Bagging		3 c.	@	....
Book Stock		2½c.	@	....
Newspaper Stock		2 c.	@	2¼c.
Waste Paper and Scraps		1½c.	@	....
Kentucky Bale Rope		4 c.	@	....
Oakum Junk, No. 1		4½c.	@	5 c.
" No. 2		3 c.	@	....
Tarred Shakings		1 c.	@	1½c.
Grass Rope		1 c.	@	1¼c.

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the Week ending Oct. 30, 1877:

Hamburg.

	Quan.	Value.
Sew. mach., cs	947	$26,911
Spelter, slabs	1976	6,700
Mach'y, cs	38	3,980
Copper, bbls	90	22,500
Hdw., cs	122	4,357
Ag. Imp., pgs.	24	1,195
Clocks, cs	80	1,047
Pumps, cs	8	320
Belting, cs	1	320

Bremen.

Ag. imp., pkgs	80	3,307
Hdw., pkgs	140	3,115
C'ge mtls., pgs	114	375
Air pistols, cs.	1	200
Mach'y, cs	35	2,430
Pl'd ware, pgs	2	550
Copper, plates	158	4,600

Antwerp.

Ag. imp., pkgs	4	300
Springs, cs	3	275
Mf. iron, pkgs.	36	358
Sew. mach., cs	26	2,000

Rotterdam.

Sew. mach., cs	4	390

Liverpool.

Machy., cs	15	514
Hdw., cs	111	5,760
Cutlery, cs	1	2,200
Locomo. tires	176	7,287
Clocks, cs	44	1,950
Ag. imp., pgs.	11	781
Em'y w'ls., cs.	1	100
Lea. belt., cs.	2	806
Iron, cs	7	460
Sew. mach., cs	2	172
Mf. iron, pkgs.	25	645
Pl't'd ware, cs.	1	395
Car mtls., pgs	61	1,328
Wringers, cs	24	818

London.

Sew. mach., cs	637	12,483
Hdw., cs	302	8,782
Mach'y, cs	60	3,348
Pumps, pkgs	3	260
Clocks, bxs	296	3,389
Belting, cs	3	910
Ag. imp., pkgs	20	628
Lamps, pkgs	4	382

Hull.

Hdw., pkgs	108	21,000
C'ge mtls., pgs	10	321

Bristol.

Clocks, bxs	87	950

Glasgow.

Hdw., pkgs	6	439
Pumps, pkgs	5	230
Clocks, bxs	245	4,036

Havre.

Ag. Imp., cs	16	1,170
Copper, bbls	60	22,400

British East Indies.

Clocks, pkgs	10	300

British North American Colonies.

Hdw., pkgs	15	350
Mf. iron, pkgs	187	848
Pig iron, tons	50	1,000
Coal, tons	287	861
Iron safe	1	175
Clocks, box	1	34

British West Indies.

Hdw., pkgs	18	114
Nails, kegs	144	445
Tinware, cs	3	80
Mf. iron, pkgs.	30	421
Iron knees	6	480
Carriages	2	340

Cuba.

Hdw., cs	1653	6,745
Mf. iron, pkgs.	33	529
Mach'y, pkgs	1279	52,140
Br'ss tubes, cs.	2	218
Pump	1	400
Nails, cs	24	201
Cutlery, cs	1	166
R. R. iron, t'ns.	375	10,223
Grindstones	4	65
Nails, kegs	6	51
Lamps, pkgs.	2	58
Ag. imp., pkgs	9	212
Gas fixt's, cs	2	247
Grindstones	25	169
Sew. mach., bx	1	45

Porto Rico.

Nails, kegs	295	828
Hdw., pkgs	26	267
Lamps, pkgs.	5	339
C'ge mtls., pgs.	23	83
Cutlery, pkgs.	4	45
Sew. mach. cs.	5	160
Ag. imp., pgs.	10	181

Cisplatine Republic.

Coal, tons	250	1,250

Central America.

	Quan.	Value.
Zinc, cask	1	$57
Mf. iron, pkgs.	95	381
Lamps, pkgs.	86	1,149
Nails, kegs	7	70
Ag. imp., pkgs	6	93
Mf. copper, cs.	5	547
Cutlery, cs	10	382
Tinware, cs	8	149
Sew. mach., cs	2	61
Hdw., pkgs	20	334
Mach'y, cs	26	170

Japan.

Hdw., cs	6	300
Mf. iron, pkgs.	75	175
Nails, kegs	200	500
Iron, cs	5	34
Coal, tons	76	300

United States of Colombia.

Cutlery, bxs	134	2,348
Hdw., cs	31	1,557
Cartridges, cs.	2	47
Guns, case	1	100
Revolvers, cs.	2	196
Pump	1	60
Firearms, bxs.	6	497
Pl't'd w're, cs.	1	275
Sh't iron, bdls.	5	52
Sew. mach., cs	17	545
Nails, kegs	9	161
Mach'y, pkgs.	26	512
Zinc, cs	20	926

Brazil.

Scales	7	1,659
Mf. iron, pkgs.	10	125
Pumps, pkgs.	2	77
Lamps, pkgs.	25	827
Cutlery, pgs.	93	2,070
C'ge mtls., pgs	7	1,280
Hand trucks	20	117
Hdw., cs	162	2,447
Sew. mach., cs	5	460
Barrows	60	84
Ag. imp., pkgs	8	382
Clocks, bxs	11	923
Shoe nails, bxs	19	132
Mach'y, pkgs.	23	2,800

Hayti.

Pumps, pkge.	1	43
Nails, kegs	25	62
Iron safes	2	300
Iron, bdls	33	351
Hdw., pkgs	39	576
Mach'y, pkgs.	298	14,050
Springs, case	1	82
Mf. iron, pkgs	13	217
Sew. mach., cs	36	615
Lamps, pkgs	8	378
Coal, tons	32	266
Shoe nails, cs.	46	673
Pl'd ware, bxs	5	90
Metal, bxs	20	288
Revolvers, cs.	1	391
Nails, kegs	21	67
Hdw., pkgs	206	3,399
Tinware, cs	12	638
Ag. imp., pgs.	9	60
Mach'y, cs	34	752

Argentine Republic.

Tinware, cs	10	191
Ag. imp., pgs.	191	3,078
Lamps, pkgs.	3	120
Tacks, cs	50	396
Hdw., cs	102	3,138
Mf. iron, pkgs	2	92
Gas fixt., pkgs	4	14
Cartridges, cs.	1	80

Mexico.

Carbines, cs	1	245
Arms, cs	1	467
Tinware, cs	3	205
Gas fixt., cs	1	120
Hdw., pkgs	270	5,683
Lamps, pkgs.	35	851
Nails, bxs	142	1,726
Revolvers, cs.	3	2,675
Burners, cs	1	75
Clocks, pkgs	70	1,621
Mach'y, pkgs	54	8,733
Rifles, cs	50	15,500
Am'nition, cs.	2	190
Pistols, cs	2	232
Shells, case	1	94
Tin, cs	72	586
Syringes, cs	3	575
Pumps, pkgs.	9	603
Spikes, pkgs.	141	951
Cutlery, pks	104	6,512
Mf. iron, pkgs	31	704
Nails, kegs	461	1,398
Ag. imp., pgs.	42	1,407
C'tridges, cs	256	8,270
Sew. mach., cs	278	4,782

Peru.

Ag. imp., pgs.	139	1,742
Zinc, pkgs	3	138
Cutlery, cs	12	393
Tinware, cs	20	676
Grindstones	42	55
Clocks, pkgs.	33	660
Mach'y, pkgs.	270	13,910
Hdw., pkgs	109	3,620
Lamps, pkgs	8	859
Sew. mach., cs	42	909
Belting, bxs	3	403
Chains, pkgs.	4	241
Mf. iron, pkgs.	10	107

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Oct. 29, 1877:

Hardware.

Boker Hermann & Co.
Cutl'y, cks., 4; cs., 1
Files, cks., 1
Folsom H. & D.
Mdse., pkgs., 4
Frasse P. A. & Co.
Mdse., pkgs, 2
Hutchinson J. W.
Empty cartridge cases, cs., 3
McCarty & Hasberg,
Cases, 2
Merchants' Dispatch Co.
Empty cartridge cases, cs., 6
Moore's J. P. Sons
Gun caps, cs., 6
Arms, cs., 6
McCoy & Co.
Mdse., pkgs., 11
Sharps Rifle Co.
Mdse., pkgs., 1
Schoverling & Daly,
Cases, 1
Arms, cs., 2
Schuyler, Hartley & Graham,
Cases, 1
Sussfield, Loesch & Co.
Cases, 2
Ward Asline,
Cutlery, cs., 3
Wolf's Jean,
Arms, cs., 1
Wiebusch & Hilger Hdw. Co.
Hrdw'e, and cutl'ry, pkgs., 10
Order,
Cases, 5
Casks, 4
Per. caps, cs., 4
Cartridge cases, cs. 6
Files, cks., 4
Packages, 4
Anvils, 172

Iron.

Boker Hermann & Co.
Spiegel, tons, 150
Hervey A. L.
Pig, tons, 100
Perkins, Livingstone & Post,
Pig, tons, 100
Sampson G. G.
Pig tons, 100
Order,
Pig, tons, 100

Steel.

Brown William,
Bundles, 90
Naylor & Co.
Scrap, tons, 44
Prosser Thos. & Sons,
Tyre forgings, 50
Woodford W. O.
Cases, 3
Bundles, 61
Bars, 6
Order,
Bundles, 280
Truck Axles, 1
Cases, 12
Casks, 26
Rods, bdls., 356

Metals.

Agastini J.
Scrap cop'r, pkgs., 3
Beer J. & Son,
Tin plates, bxs., 100
Bruce & Cook,
Tin plates, bxs., 114
Terne pl'es, bxs., 192
Cort N. L. & Co.
Tin plates, bxs., 595
Kinhardt & Co.
Copper, bbls., 6
Naylor & Co.
Tin plates, bxs., 1662
Phelps, Dodge & Co.
Tin plates, bxs., 8896
Revere Express Co.
Copper ore, sks. 1102
Robertson H.
Copper ore, sks. 1045
Order,
Lead, pigs, 793
Tin, bxs., 395
Tin plates, bxs., 5237
Tin plates, tin and black taggers, bxs, 1010

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, October 30, 1877.

We have again to report a somewhat improved feeling in business circles, not in any special activity already realized, but the evidences of approaching prosperity seem to grow brighter, and the future is regarded with much confidence, although some of our best-informed merchants anticipate a quiet time during the next few weeks. There is, however, a fair increase of business, as compared with last year, particularly in some lines of hardware, as, for instance, we saw a single order, which the Enterprise Mfg. Co. recently received, amounting to $20,000 for one line of their special manufactures, while in every department they are pushed to their utmost capacity, although they have 250 hands constantly at work. Among the machine shops there are also evidences of improvement, and in almost every direction we notice a gradual increase of business. In boiler work, too, and in shipbuilding we are glad to learn that there are good prospects for winter employment, and the outlook generally may be considered better than for a long time past.

Pig Iron.—There has been but little change in the condition of the market for some time past; prices remain steady, with a good demand for standard brands, while others are dull and neglected. Taking the market as a whole, there seems to be a confident feeling in regard to the future, and a general impression that prices have touched bottom, and that the next change will be in favor of sellers. There is undoubtedly a large consumption of iron going on, and, in the meantime, if nothing unfavorable intervenes, there is a fair prospect of the year closing on an active and improving market, although some of the most experienced dealers still anticipate a temporary reaction before any general improvement takes place. The demand keeps up well, however, and the trade may, perhaps, drift almost imperceptibly into full activity before the fact is fairly realized. There seems to be a good many hypothecated lots of Iron offering, at all sorts of irregular prices, but standard brands do not appear to be affected thereby, from which it may be inferred that the market is in a stronger position than formerly. These lots, however, cut off the demand, so far as they take the place of current production, and probably tend to prevent any immediate advance in prices. Another evidence of strength, we think, may be seen in the fact that furnace after furnace has been "blown in" within the past few months, without weakening prices in the least. The Thomas, Crane and Allentown Companies have now thirteen furnaces in blast, while a few months ago they had only about half the number. The Glendon, Andover and others that might be named have also recently blown in additional furnaces, without any perceptible effect upon values, showing that the product can be taken and absorbed at current rates, in addition to considerable quantities of outside lots, as previously mentioned. Sales appear to be entirely to the trade, to meet legitimate requirements, and there is no speculative movement whatever; it is expected, therefore, that the demand will continue about as at present. In regard to prices there seems to be a generally satisfactory understanding on the part of both buyer and seller, the former being willing to pay current quotations for standard brands, and sellers are equally willing to meet the market. With large lots pressed for sale the case is different, and some transactions are reported at exceedingly low prices, but these are not a fair indication of the general market. Our quotations of last week fairly represent the market for standard brands, say: No. 1 Foundry, $18 to $19.50; No. 2 do., $17 to $18; Gray Forge, $16 to $18; Mottled, $14.50 to $15, with continued large offerings of the lower grades.

Blooms.—We quote sales at the following prices: Sunken Scrap Blooms (2464 lbs.), $42 to $45; Northern Ore Blooms (2240 lbs.), $37 to $39; best quality Charcoal Billets (2240 lbs.), for wire and steel purposes, $50 to $55; Bars, do., $65 to $67.50; Sheet Iron Blooms, cornered (2464 lbs.), $60 to $62.50: Cold-blast Charcoal Plate Blooms, $55 to $57.50; run out Anthracite, $50 to $52.50.

Plate and Tank Iron.—We cannot report any transactions of importance, and for the time being trade is rather disappointing. Complaints of cutting in prices are very general, and some of the mills are doing little or nothing on account of the low prices offered. Others are fully employed, although it is supposed at very unremunerative rates. It must be remembered, however, that some cheap lots of Pig Iron have been on the market recently, and it is more than probable that cash buyers for large lots have supplied themselves with the raw material at the lowest prices of the whole year, thereby enabling them to offer their products at corresponding figures, and still have left a fair margin for profit. We cannot say that the market is in any worse position than at date of our last report. Business can be had at a price, and while there is nothing to indicate any special improvement, there is likely to be a steady demand from week to week. We continue our late quotations, as follows: Common Plates, 2.3c. to 2.4c.; Tank Iron, 2.3c. to 2.7c.; C. No. 1, 2.4c. to 2.6c.; Shell Iron, 2.85c. to 3c.; Flange Iron, 3.85c. to 4.25c.; Solid Fire Box, 4.85c. to 5c., and Best Bloom, 5.5c. to 6c.

Sheet Iron.—This branch of trade does not come up to anticipations, although a fair average business may perhaps be done yet before the season is over. In the meantime there is no life or animation in the demand; buyers are timid and take nothing but small lots, as may be required. The lower grades sell freely, but there is a decided dullness in the higher grades, which are almost entirely neglected. It is not unlikely, however, that the trade may be more protracted than usual, and at least an average quantity marketed, although the low prices will reduce profits as well as money value. We quote: Refined Sheet Iron, No. 26 to 28, 3¾c.; No. 22 to 24, 3½c.; No. 16 to 21, 3¼c.; Best Bloom Sheets, No. 26 to 28, 5½c.; No. 22 to 24, 5¼c.; No. 16 to 21, 5c.; Common Red Plates, 5-16 to 18, 2⅜c. to 2½c.; Refined Plates or Blue Annealed, 5-16 to 18, 2¾c.; American R. G., 5-16 to 18, 3¼c.; Best Bloom, 5-16 to 18, 5c.; Philadelphia Russia, 8c.; A. Patent Planished, 10½c.; B. Patent Planished, 9½c.; Bloom Galvanized 40 per cent.; Refined Galvanized, 50 per cent.

Bar Iron.—The general condition of the market is still one of dullness, but there are indications of improvement, which it is hoped may soon be realized. The demand for ordinary Merchant Iron continues inactive, but in specialties there is quite a satisfactory movement. We learn from several of the leading manufacturers of machine tools that prospects of a larger business seem to grow brighter; some few orders from railways have been placed already, and there are additional inquiries which it is expected will result in business eventually. A renewal of active business in the machine shops would be of immense benefit to the Bar mills, and the indications in that direction appear to be quite encouraging. Some large concerns, such as the Edgemoor, Phœnix and Pencoyd, have large contracts under way, and it would not require much additional business to impart a fair degree of activity to all the mills in this vicinity. The advance in freights, too, is having a good effect, as it is so much in favor of local manufactures. For some reason or other (either the higher rates of freight or a better demand West), there are less complaints of competition with Western Iron than formerly, and the trade generally, although dull for the time being, seems to tend toward improvement. We continue late quotations as follows: Common Iron, 1.50c. to 1.70., and Best Refined, from 2c. to 2.10c.

Muck Bar.—We do not hear of any sales of importance, but a fair quotation would be $32 to $33, Philadelphia delivery.

Steel Rails.—Since the date of our last report the market has been somewhat irregular, but business seems to have settled down again to about the old quotations. A number of sales are reported, which would probably make the total for October aggregate 60,000 tons, the market closing at $40 to $42, at mills. There are further inquiries, and it is expected that at least 40,000 tons additional will be placed before the close of the year. Some of the mills having considerable orders on hand are firm at outside figures, but we understand sales have recently been made at $42.50, delivered at tide, and it is not unlikely large lots for cash could still be bought on equally good terms, although nominally prices are a little higher, say $42 to $43, at mills.

Iron Rails.—Business continues dull and inactive, and nothing of importance has transpired for some time past. There are plenty of inquiries, but in several instances there is little prospect of business, as the buyers do not offer acceptable collaterals. There are some parties, however, who will probably shortly place their orders, but in the meantime we cannot hear of any but sales of small lots, aggregating 1500 to 2000 tons, a considerable portion of which were street rails on private terms. We quote $32 to $35, at mills, according to section, quality and terms of payment.

Old Rails.—The demand continues good, and all offerings seem to be promptly taken. We do not hear of any spot offerings, but there has been some considerable sales at outside points, all at full figures. We quote $19 to $19.50, according to quality, for Philadelphia delivery. The market steady and firm. Sales to-day at $19.50.

Old Car Wheels.—Business is still dull and prices entirely nominal; the demand, apparently, has entirely ceased. Holders ask $18 to $18.50 without finding buyers.

Old Car Axles.—We do not hear of any transactions, and quotations are entirely nominal, say $24 to $26, according to quality.

Scrap Iron.—Prices are without change; selected lots bring full prices, while other descriptions are dull and weak. We quote: Cast, $14.50 to $16; Wrought, $22 to 23.50.

Nails.—The demand is pretty well sustained, and the market seems to have settled to $2.40 as a uniform price to dealers and $2.50 to consumers.

Lead.—The market has shown considerable activity since our last, and sales of about 600 tons are reported, the market closing firm, with large sales at $4.50 for Common, and $475 now asked. Refined is held at 5c.; Manufactured is unchanged and active as follows; Bar, 7c.; Pipe, 7½c.; and Sheet, 8c. Shot, Drop, 8¾c to 9¾c.; Buck, 9¾c. to 10¾c., all less 10 per cent. to the trade.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, Oct. 30, 1877.

The improvement in general business noted in my last report is still maintained, and the outlook is very much better than it was on the opening of the month. In manufacturing circles, Iron in particular, business was very dull, unusually so last month, and it looked as if we were to have a very hard winter; but as already intimated, there has been a very decided change for the better recently, and it looks as if the predictions of the croakers were not likely to be realized. The partial resumption of navigation has had a good influence, as it always does, and notwithstanding the remark of Henry Clay that the Ohio River was dried up one-half of the year and frozen up the other, Pittsburgh could not very well do without it, and it is not strange, therefore, that her people are clamoring to have it improved. The flurry among the savings banks appears to have subsided, as there have been no suspensions for some days; but the indications are that the most of them will have to wind up, as, owing to numerous suspensions recently, people have lost confidence in them. Hence, many depositors are drawing out and putting their money in the national banks, having concluded that it is better to do with less interest than run the risk of losing both interest and principal. Some of our national banks are refusing to pay interest on deposits.

Pig Iron.—There is a steady consumptive demand, and the tone of the market is rather firmer in consequence, although prices remain unchanged. The daily average consumption in Pittsburgh, when the mills are all employed, is estimated at about 6000 tons, and there is reason to believe that it is not much short of that at the present time, in view of the fact that many of the mills are working up to their utmost capacity, and while some of them have fair stocks, the yards of others are almost bare. With an increased consumption, there is, of course, an increasing demand, and while the mills are buying only to supply their immediate necessities, many of them are willing, some of them anxious, to anticipate future wants, when they can do so at a reduction of, say, 50c. to $1 per ton from current rates. This being the case, it is evident that consumers as well as producers are becoming impressed with the belief that prices have touched bottom, and that at the concession noted pig iron is a safe investment. It is about as well developed as anything can be that the cost of production has been reduced to the very lowest limit, and with the cost of fuel and labor more likely to be advanced than reduced, and no probability of any cheaper ore, there is no reason to look for cheaper pig iron; on the contrary, the indications at present are more favorable for an advance than a decline, hence it is not strange that some of our largest consumers are disposed to stock up, nor, on the other hand, that a stronger feeling on the part of producers has been developed. Prices remain about as last quoted: Connellsville Coke, $17.50 to $18, cash, to $18 to $18.50, 4 months, for Gray Forge; Bituminous Coal smelted, $20 cash, to $20.50, 4 months, for standard brands of red-short Gray Forge; $22 to $23 for No. 1 Foundry, and $20 to $21 for No. 2; Hanging Rock Charcoal, No. 1 Foundry, $26 to $28, 4 months; No. 2 ditto, $23 to $25, the outside figure for standard brands. No movement in blooms; very few sold here for two or three years past, and Pittsburgh can no longer be considered much of a bloom market; fair to best Charcoal quotable at $55 to $59, 4 months.

Manufactured Iron.—The activity noted in my last still continues, and notwithstanding the gloominess of the outlook a few weeks ago, the demand at present for all the leading sizes and prominent specialties is fully up to if not better than it usually is at this particular time. Mills that a month ago had scarcely an order of any consequence on their books are now, although working up to their full capacity, hardly able to keep up with their orders. True, as yet there has been no advance, and current rates to manufacturers continue unsatisfactory; but the increased demand, as might be expected, has developed a stronger feeling, and there are but few, if any, sellers at the rates common 60 days ago. It is very evident that the cost of production has been reduced to the very lowest notch, and as both labor and fuel are firmer, the chances are more favorable for an advance than a decline; and this accounts for the increased demand, as well as the firmness on the part of makers, to which reference has been made. Mixed orders may be quoted at 1.80c. to 2c. rates, 60 days, with 2 per cent. off for cash; an order for all bars could not be placed under 2c. Hoop Iron, in which there is considerable activity, is quoted at 2.70c. to 2.90c. There is a very fair demand for Tank Iron, but the inquiry for Boiler Iron is only fair, owing to the fact that Steel is to a considerable extent taking the place of Iron for boilers. Those mills making agricultural Iron a specialty are doing a fair business, and it may be quoted steady at 2c. rates.

Nails.—The general position of the market remains much the same as noted in my last report. Business is fair, although makers, as a rule, are making no effort to push it at current rates, which afford no margin for profit. A manufacturer informed your reporter yesterday that his firm could, if so disposed, increase their business considerably, but that there was no inducement to do so; and the inference conveyed was that the firm in question was selling only small lots, and that contracts for large lots would not be accepted at prevailing rates, and this appears to represent the views of the trade. It is unfortunate that prices were reduced so low, as there would have been just as many sold at $2 25 or $2.30 as $2.15, but as the best part of the fall trade is now over, and nearly all the large buyers have their orders placed, no immediate advance is probable. We continue to quote at $2.25, 60 days, in a jobbing way, and $2.15, 60 days, with 2 per cent. off for cash.

Horse and Mule Shoes.—The market continues quiet and prices remain unchanged. Shoenberger & Co. still quote 100-keg lots at $3.80 and $4.80, cash. Special rates for larger lots.

Wrought Tubing.—There is nothing new to report; business continues quite active, mills are all busy, and the indications are that they will have about all they can do during the remainder of the year.

Steel.—The demand for all the leading styles continues to keep up well, and the mills generally have about all they can do. The consumption continues to keep up with the production, notwithstanding the latter has been considerably enlarged within the past few years. There is more poor stock being made now than previously, owing to the clamor for something cheap, but those wanting good qualities can easily obtain them providing they are willing to pay for them. Tool steel, for instance, ranges all the way from 11 to 14 cents, according to quality, and there is a similar range in other kinds.

Scrap.—There has been a fair business in Old Rails, and prices are reported firmer, but not quotably higher. Sales of 1000 and 500 tons reported at $20, cash. We can also report several sales of Old Car Wheels recently at $20.50 to $21, 4 months. No. 1 Railroad Wrought Scrap is still quoted $24 to $25, 4 months.

Window Glass.—Business is panning out better than was expected, and it is considerably better than it was at this time last year, which may be attributed to the fact that prices are lower, although there is reason to believe that the consumption is greater. Discounts still quoted at 70 and 5 by the car load, and 60 and 20 to 70 for smaller lots.

Petroleum.—The refining business continues in an unsettled and unsatisfactory condition. Outside refiners—by which we mean those not controlled by the Standard combination—are considerably perplexed, as they are in the dark as to the future policy of the Standard. They do not know whether it is the intention of the combination to put prices up or down. It is generally conceded that the Standard for the time being is master of the situation, as they now own and control nearly all the pipe lines and about three-fourths of the refining capacity.

BOSTON.

Oct. 27.—*Iron.*—Pig continues in very good demand, and our outside prices are now easily obtained. The demand is in small lots for immediate consumption, and there is little speculative feeling. We quote: $21.50 for No. 1; $20 to $20.50 for No. 2, and $19.50 to $20 for Gray Forge. *Bar* continues unchanged, quoting $43 to $45 for Refined, and $35 to $36 for Common. Nails are in light demand at unchanged prices. Sheet is selling at 2¾c. to 3c. per pound. Russia is quiet at 12c., currency. We quote English Spring Steel at 7c. to 8c., gold; 9c. to 11c. for German; 9c. to 11c. for Machinery; 14c. to 16c. for Cast; 10c. to 12c. for Blister; 8c. for American Spring; 13½c. to 14c. for Cast; 9c. for Blister, and 8c. for Machinery. *Copper* is a little easier, with New York sales for the week restricted to 200,000 pounds Lake on the spot at 17¾c. to 17⅞c., and with nothing doing in futures. For manufactures we quote: New Sheathing, 28c.; Bolts and Braziers, 30c.; Yellow Metal Bolts, 25c. to 25½c.; do. Sheathing, 20c. *Lead* is firm, with considerable sales at St. Louis at a slight advance. We quote: Pig, 4½c., to 4¾c., currency. For Domestic Sheet, 8c.; Pipe, 7½c.; Tin-Lined Pipe, 15c.; Bar Lead, 7c.; all of these, excepting Pig, are subject to the usual trade or 10 per cent. discount. *Antimony* is strong at 13c., gold, for Boston spot lots, and *Spelter* is easy, closing at $6 on the spot for 10-ton lots. *Tin* maintains the improved tone. Stocks are not excessive. We quote: Straits, 16c.; Banca, 18½c. to 19c.; Refined English, 15¾c. to 16c., gold. We quote Plates: Charcoal, I. C., $7 to $7.25; Coke, $6 to $6.25; and Terne, $6.50 to $7, gold.—*Commercial Bulletin.*

ST. LOUIS.

Specially reported by Messrs. SPOONER & COLLINS, Iron Commission Merchants, 217 North Third street, St. Louis, under date of Oct. 25: Pig Iron is still active, the demand is good and present prospects show no possibility of a decline. We quote same as last, although cheap lots are constantly being offered here at reduced prices. Our quotations are for standard brands of Pig Iron only.

	No. 1.	No. 2.	Mill.	White and Mot'ld
Missouri Stone Coal	$22.00	$21.00	$20.00	$19.00
Missouri Charcoal	22.00	21.00	20.00	20.00
Tennessee Charcoal	22.50	21.00	20.00	19.00
Southern Coke, very soft and strong	23.00	21.00	20.00	18.50
Hanging Rock Charcoal	25.00	24.00	23.00	.....
H. R. Charcoal, Cold-short	24.00	23.00	.....	.....
	Extra		B.	
Hanging Rock Coke	No. 1.	No. 1.	No. 1.	No. 2.
West Virginia, Coke	25.00	24.50	24.00	22.00
	23.50	23.00	22.00	21.50

COLD-BLAST CHARCOAL—All Numbers.

Hanging Rock	4 mos.	$25.00 @ 38.00
Tennessee	4 mos.	26.00 @ 30.00
Kentucky	4 mos.	26.00 @ 30.00
Missouri	4 mos.	26.00 @ 30.00
Georgia	4 mos.	26.00 @ 30.00
Alabama	4 mos.	26.00 @ 30.00
Assorted Bar Iron		2.00 rates.
No. 1 Railroad		1.00 per h'd
Machinery Scrap "		.80 @ "
Heavy Cast " "		.65 @ "
Light Cast " "		.55 @ "
Old Rails	4 mos.	19.00 @ 20.00
Old Car Wheels	4 mos.	17.00 @ 18.00

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Oct. 27, write us as follows: PIG IRON.—We note a good demand for both Foundry and Mill Irons during the past week at certain times, the market being decidedly active. Offerings continue free, however, and with the large stocks still on hand no change for the better in prices has occurred. The prospects for a steady demand are good.

HOT-BLAST FOUNDRY.

Hanging Rock No. 1, Charcoal	$23.00 @ 23.50
Hanging Rock No. 2, Charcoal	22.00 @ ....
" No. 1 Coke	22.50 @ 23.50
" No. 2 "	21.50 @ 22.00
" No. 1, Stonecoal	20.00 @ 21.00
Virginia, No. 1 Coke	22.00 @ 23.00
" No. 2 "	20.50 @ 21.00
Ala. and Tenn., No. 1 Charcoal	22.00 @ 22.50
" No. 2 "	20.50 @ 21.00
Red-short, No. 1 Coke	23.00 @ 23.50
Shawnee No. 1	22.00 @ ....
Alice No. 1 ex	23.50 @ ...
Alice No. 1	22.50 @ .....

FORGE IRONS.

Hanging Rock No. 1 Charcoal	$21.00 @ ....
Hanging Rock No 1 Coke	19.50 @ 20.50
Virginia, No. 1	18.50 @ 19.50
Ala. and Tenn. No. 1 Charcoal	18.50 @ 19.50
Red-short, No. 1 Coke	21.00 @ 22.00
Cold-short, No. 1 Stonecoal	18.00 @ 19.00

CAR WHEEL AND MALLEABLE.

Hanging Rock	$35.00 @ 38.00
Southern and Western Brands	27.00 @ 33.00

ORE.

Virginia Hematite (Washed) cash.	$4.25 @ .....

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Oct. 29, write us as follows: There is a good demand for foundry Irons at the prices that have ruled for some months. As there is no diminution in the pressure to sell, these prices are not likely to improve for some time to come. The usual time, 4 mos., allowed on quotations below.

FOUNDRY IRONS.

No. 1 Hanging Rock, Charcoal	$23.00 @ 24.00
No. 2 " "	20.00 @ 21.00
No. 1 Southern, Charcoal	20.00 @ 21.00
No. 2 " "	19.00 @ 20.00
No. 1 Hanging Rock, Stonecoal and Coke	20.00 @ 22.00
No. 2 Hanging Rock, Stonecoal and Coke	19.00 @ 20.00
No. 1 Southern, Stonecoal and Coke	19.00 @ 20.00
No. 2 " "	18.00 @ 19.00
"American Scotch"	21.00 @ 22.00
Silver Gray	18.00 @ 19.00

MILL IRONS.

No. 1 Charcoal, Cold-short and Neut'l	18.50 @ 19.50
No. 1 Stonecoal and Coke, Cold-short and Neutral	18.00 @ 18.50

No. 2 Stonecoal and Coke, Cold-short and Neutral ..... 17.50 @ 18.00
No. 1 Missouri and Indiana Red-short. 21.00 @ 22.00
White and Mottled, Cold-short and Neutral ..... 15.00 @ 16.00

CAR WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold-blast ..... 34.00 @ 38.00
Alabama and Georgia, Cold-blast..... 25.00 @ 33.00
Kentucky, Cold-blast..... 25.00 @ 33.00

W. B. BELKNAP & Co., Iron and Stee Merchants, Louisville, Ky., under date of Oct. 29, report trade good in spite of the continued warm weather, which postpones the demand usually incident to the season. Prices unchanged. The well-sustained activity would indicate that the business improvement in the South is solid and substantial and has come this time to stay.

CHICAGO.

L. R. HULL & Co., 95 Washington street, under date of Oct. 29, report as follows: Trade during the past week has been fair; all grades are in good supply, and there must be a more active demand before higher prices can be looked for. There are no changes to note in quotations.

CHARCOAL FOUNDRY.

Lake Superior No. 1 ..... $24.00 @ 25.00
" No. 2 ..... 23.00 @ 24.00
" No. 3 ..... 23.00 @ 24.00
" No. 4 and 5 ..... 24.00 @ 25.00

COKE FOUNDRY.

Lake Superior No. 1 ..... $23.50 @ 24.50
" No. 2 ..... 22.50 @ 23.50

SOFT FOUNDRY.

No 1 ..... $23.50 @ 24.50
No. 2 ..... 22.50 @ 23.50
American Scotch ..... 22.00 @ 23.00
Silvery Grey ..... 20.50 @ 21.50

CHATTANOOGA.

Specially reported by S. B. LOWE, Dealer in Metals, under date of Oct. 29: Considerable activity has prevailed during the past week, with sales of about 600 tons, mostly Gray Forge. Great activity is manifested in Fish Plate, Bolts and Spikes; prices however are very low for metals, but no particular change can be noted.

COKE.

No. 1 Foundry, extra ..... $20.00 @ 21.00
No. 1 Foundry ..... 19.00 @ 20.00
No. 2 Foundry ..... 17.00 @ 18.00
Gray Forge ..... 15.00 @ 16.00
White and Mottled ..... 14.00 @ 15.00

HOT-BLAST CHARCOAL.

No. 1 Foundry, extra ..... $20.00 @ 21.00
No. 1 Foundry ..... 19.00 @ 20.00
No. 2 Foundry ..... 17.00 @ 18.00
Gray Forge ..... 16.00 @ 17.00
White and Mottled ..... 15.00 @ .....

COLD-BLAST CHARCOAL.

Car Wheel Metal ..... $22.50 @ 27.50
" extra ..... 24.50 @ 29.50
Forge Metal ..... 17.50 @ 22.50
Muck Bar ..... 29.00 @ 34.00
Old Car Wheels ..... 17.00 @ .....
Old Rails per ton ..... 16.50 @ 17.50
Brown Hematite Ore 50 to 56 per cent. per ton ..... 1.75 @ 2.25
Red Fossiliferous Ore, 50 to 56 per cent. per ton ..... 1.50 @ 1.75

Nails ..... 2¼c. | Track Bolts ..... 3c.
Bar Iron ..... 2c. | Trestle Bolts ..... 4c.
R. R. Spikes ..... 2½c. | Ingot Copper ..... 20c.
Light Rails ..... 2¾c. |

BALTIMORE.

Messrs. WYETH & BROTHER, Iron and Steel Merchants, 46 and 48 South Charles street, report us the following prices, under date of Oct. 29: The past week has been a very satisfactory one as regards volume of business transacted, but want of remunerative prices is still the trouble, and these seem as if at their lowest point, and must shortly improve.

AMERICAN REFINED BAR IRONS.

1 to 6 wide by ¾ to 1 thick.... } ..@ 1.95 to 2c.
1 to 4½ wide by 1⅛ to 2 thick. }
Round and Square, ordinary sizes from ¾ to 2 inclusive ..... " 1.95 to 2c.
Hoop iron, 1¼ wide and upward.. " 3 to 3¼c.
Band Iron, from 1¼ to 4 in. wide.. " 2¾ to 3c.
Horseshoe Iron ¾ to 1 wide by ⅜ to ½ thick ..... " 3¼ to 3½c.
Norway Nail Rods ..... " 5½ to 6c.
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes ..... " 14¾ to 15c.
Machinery Steel ..... " 8 to 9c.
Cast Spring Steel ..... " 7½ to 8c.
Homogeneous Steel Plate ..... " 8½ to 9c.
Perkins' Horseshoes, per keg of 100 lbs. $4.00½
" Muleshoes 5.00½
R. R. Spikes ..... 2¼c. to 2½c.
Common Horse Nails ..... per D 14c. to 18c.

	10	9	8	7	6
Putnam Horse Nails...per D	23	24	25	26	28c.
Globe Horse Nails.....per D	23	24	25	26	28c.

Messrs. R. C. HOFFMAN & Co., Iron and Commission Merchants, No. 23 South Frederick street, report the Pig Iron market as follows, under date of Oct. 29: We have no change to report in the Iron market. Trade is moderately active, with purchases for present use only, at about quotations.

Baltimore Charcoal ..... $29.00 @ 30.00
Virginia ..... 28.00 @ 30.00
Anthracite No. 1 ..... 19.00 @ 20.00
" No. 2 ..... 18.00 @ 19.00
" No. 3 ..... 17.00 @ 18.00
White and Mottled ..... 15.00 @ 16.00

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of Oct. 29: There has been an increased demand and sales of nearly all descriptions of Pig Iron. The market for anthracite continues firm, but Charcoal Iron is weaker. Holders still demand quotations as below:

Va. Cold-blast Charcoal, Cold-short... $21.00 @ 25.00
Va. " " Neutral..... 29.00 @ 31.00
Anthracite, No. 1 X ..... 20.00 @ 21.00
" No. 2 X ..... 19.00 @ 20.00
" No. 2 ..... 18.00 @ 19.00
Coke, No. 1 X (West Virginia) ..... 22.00 @ 23.00
" No. 2 X " ..... 21.00 @ 22.00

FOREIGN.

FRANCE.

(Moniteur des Interets Materiels)

PARIS, Oct. 13, 1877.—*Metals.*—Activity in the French metal markets has been checked by the election to come off to-morrow, and the ensuing week will also be a quiet one probably. Meanwhile, with the exception of Tin, which is still tending upward, there has been little or no change. *Copper.*—The accumulation of stocks in England and France prevents all improvement in value, as long as consumption does not revive vigorously and the export demand for India remains slack. Speculators in Copper have made such bad experience during the past few years that the metal cannot receive much aid from this element, especially now that money is becoming dearer. We have been quiet here, and quote Chili Bars 175 francs the 100 kilos; Common ditto, 172.50; Ingots, 182.50; English Tough Cake, 182.50; Best Selected, 185; and pure Corocoro Ore, 177.50. Havre is steady and quotes as follows: First brands Chili Bars, 178 to 180; good current ditto, 177.50 to 178.75; and Lota and Urmeneta, 175 to 177.50, Paris conditions. Marseilles has been sustained. Red Tokat, 170; small Refined Ingots, 175 to 180; Bolts, 220; Sheathing, 210; and Yellow Metal ditto, 205. *Tin.*—Now that Tin has reacted of its own strength, speculators are also more anxious to co-operate, and the advance is thus accelerated beyond what seemed likely in the beginning. The market has been strengthening here by degrees. We quote Banca, deliverable at Havre or Paris, 182.50 francs the 100 kilos; Billiton, 173.50; Straits, 175; Australian, 171.50; and English, at Havre or Rouen, 171.25. Marseilles is firm as follows: Straits, 170; Billiton, 170; English Refined, 185; and Banca, 185. *Lead.*—Smelters are indifferent about selling ahead, since they now have plenty of Lead orders from all quarters, and the arrivals from Spain are lighter than they have been for some months past. We quote French, deliverable at Paris, 50.50 francs the 100 kilos.; Spanish, deliverable at Havre, 50.25; English ditto, 50.25; and Belgian and German at Paris, 50.50. Havre is steady at 50.50 to 51 for Spanish Soft, first fusion. Marseilles maintains its attitude of firmness and quotes soft Refined, 48 to 48.50; second ditto, 47.50; Sheet and Pipe, 51 to 51.50; and Shot, 53. *Spelter* seems to have settled down to a position of greater stability and even gives some symptoms of revival. We are firm here, and quote Silesian, deliverable at Havre, 50.50; other good brands at Havre, 51; and at Paris, 51. Marseilles is quiet; Vieille Montagne Sheet Zinc, 65; other brands, 63, less 3 per cent. discount, and old Remelted, 41. *Iron.*—Business has been more of a retail nature, but the Northern Railroad has given some orders, among others for 2400 tons Steel Rails. In the Ardennes some activity has manifested itself in architectural Iron intended for this city. The Haute Marne is also uninterruptedly busy, turning out Nails, Wrought Iron and Castings. Nail Rods, Chains and Wire are neglected for some time past; for Iron Bedsteads there are some commands. In the Meurthe and Moselle another blast furnace for affinage Pig Iron has been blown in. The latter abounds at 62 to 63 francs, except in the Longwy basin, where it is scarce at 64. Ordinary No. 1 Coke Iron is worth 170 francs. The best feature in this region is that the rolling mills remain busy. In the Central districts, Iron industry is suffering, and the works lacking railroad orders have nothing but a limited local demand to fall back upon. In the Northern Department, Merchant Iron of the first class is being sold without difficulty at 170 francs; larger lots, however, go at 165.

BELGIUM.

(Revue Universelle).

BRUSSELS, Oct. 14, 1877.—*Iron.*—There is a good deal of discontent among Iron men in Belgium about the preference given the Accoz Society at the adjudication for 222 tons Railway Spikes. In its tender the company stipulated cash payment only, without specifying the conditions on which it would take Old Rails, and other manufacturers now claim that for the lack of the prescribed specification the award be cancelled. There have been received some large orders in Belgium, coming from foreign governments, and the rolling mills are busily engaged in filling them. Although prices are low, these commands afford a great relief, and the market in general in this country has lost its previous aspect of heaviness. The Phosphor-Bronze works at Val-Benoit are turning out Bronze Wire mining cable. This manufactory is situate near Liege, and Bronze Wire Cable is thought a great deal of, as compared with Iron Wire Cable, for mining purposes. Certain official statistics have just been published, according to which the total trade of Belgium, which between 1831 and 1840 on an average amounted to but 356,000,000 francs annually, had increased to 619,000,000 francs between 1841 and 1850, annually, to 1,446,000,000 francs between 1851 and 1860, to 2,588,000,000 between 1861 and 1870, and between 1871 and 1875 had reached the yearly average of 4,453,000,000. When, in 1830, Belgium separated from Holland, most people feared that our commercial progress, without the benefit of the Dutch colonies to ship to, would be crippled and rise but slowly. The foregoing statistics show that these apprehensions, though apparently well founded then, have not been fulfilled, thanks to our industrial activity, wise government and favorable geographical position, midway between three great commercial nations, and with England, the most important of all, right in front of us. *Coal*—In the Borinage the strikes have been ended, and the exhausted stocks are rapidly being replaced. From Charleroi a great quantity of Coal is shipped by boat to Paris. Medium and better quality is in demand, and prices are well sustained. Liege, with low Eastern freights, is also doing well. Coal for industrial purposes there is weak; for household requirements less so.

GERMANY.

(Borsenhalle).

HAMBURG, Oct. 13, 1877.—*Metals.*—Although the general aspect of trade and industry is somewhat improved in Germany, the metal markets have, on the whole, remained but moderately active. This is in part due to the downward course of prices during the summer time. The tendency was all along so manifestly toward lower values that consumers, though but lightly stocked, naturally hesitated, and as there was no speculation, little business was transacted. Now that the one or the other metal has begun to improve in England, France and Holland, our consumers still look upon the advance with a certain degree of suspicion, and we do not think that they will seriously recommence replenishing supplies till the improvement shall have assumed some unmistakable stability. *Copper* is but slowly recovering from extreme prostration. We quote here: Quincy, 86 to 88 marks the 50 kilos.; Dronthem, 79; Minnesota, 100; Best Selected, 75 to 76; Tough Cake, 74 to 75; English Sheathing, 84 to 85; and Yellow Metal ditto, 70 to 71. At Stettin we perceive the quotation remains 84 for all sorts. Berlin is unaltered. *Tin* follows with reluctance the upward movement abroad. Berlin quotes: Banca, 72 to 72.50 marks the 50 kilos.; and English, 71 to 71.50. Banca, here, 73 to 74; English Common, 73 to 74; and ditto Refined 76 to 77. Stettin is firm at 77.50 to 80. *Lead*, though firmer and as yet in tolerably good request for consumption, has been less active for export. Berlin quotes: Tarnowitz, Hartz and Saxonian, 20.25 to 20.75 marks the 50 kilos.; we are here with English Pig, 22.50 to 23; ditto Sheet, 23.50 to 24; German Pig, 21.50 to 22; Spanish, 24 to 25; White Lead, 33 to 33.50; and Dutch 33 to 33.50. Stettin quotes: Spanish 26 to 26.50; Tarnowitz, 24; and German, 24. *Spelter.*—The impression seems to prevail that a better future is drawing near for this metal, the arrivals of Spanish Calamine in England having abated during the past few months, and holders are firmer in consequence. Berlin quotes: Silesian, 19.50 to 20.25 marks the 50 kilos., at the works; Breslau, to arrive, 18 to 18.25; W. H., 18.50; and Godulla, 18.40. Stettin is moderately active at 21.50 to 22.50. We are here, Silesian, 20; Sheet Zinc, 24.50 to 25; Vieille Montagne, 25 to 25.50; ditto for Sheathing, 26.30; Zinc, White, 26 to 28; ditto Gray, 25.50; ditto Dark, 29.50.

HOLLAND.

(Koch & Vlierboom.)

ROTTERDAM, Oct. 16, 1877.—*Tin.*—There was a very strong feeling in the market during the earlier portion of the week, but toward the close great quietness prevails. Banca, spot and to arrive, gradually gave way from 41.75 guilders the 50 kilos. to 40.50, at which latter figure there are further offerings. Billiton has from 40.50 dropped to 40, spot and to arrive, with more sellers.

EAST INDIES.

(Gilfillan, Wood & Co.)

SINGAPORE, Sept. 8, 1877.—*Tin* is much as last advised. The demand for England has dwindled down to a mere nothing, while for America also very little is doing, but a continuance of moderate supplies enables the price to be supported at $19.25 per picul. Shipments from Australia in August were very moderate. Export from the Straits to the United States thus far this year, 34,831 piculs, against 26,598 in 1876, 31,660 in 1875, 23,734 in 1874, 19,741 in 1873, 34,853 in 1872, 30,919 in 1871, and 36,253 in 1870. *Tonnage* in port is much beyond our wants, and freights are consequently depressed. There is no vessel loading for Boston, and only one, The Queen of the Seas, for New York. *Exchange* closes at 3/11⅞ for six months' credit.

(Clark, Spence & Co.)

POINT DE GALLE, Colombo, Sept. 15, 1877.—*Plumbago.*—There is absolutely nothing doing. Nearly 100 tons shipped per Olive to London were all on native account. *Coal.*—We have no sales to report; arrivals have been all to order. *Tonnage.*—The freight for Plumbago to London is 40/ per ton. *Exchange.*—Six months, on London, 1/9⅜.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, Eng., Oct. 15, 1877.

THE MONEY MARKET

has been so greatly disturbed during the past week that its condition and effects have been the subjects of much attention. The rate of discount of the Bank of England was suddenly advanced to 4 per cent. on Tuesday, and on Thursday a further 1 per cent. was imposed, so that paper is now charged 5 per cent., as against 2½ and 3 which had for so long a time been the bank rates. The reasons for these changes are not very apparent, but are said to be owing to the heavy drain of silver and gold made upon us by Germany for the new coinage of the latter country. It is also possible that the bank governors anticipate troubles in France, and have, therefore, begun to clear their decks for the storm. This morning's advices from Paris, however, report quietude and order there—a state of things which everybody hopes may not be disturbed. The week's

TRADE CHANGES

have not been of very great moment, and at the time of writing, our commercial condition is much the same as ten days ago, with the exception of the dearer rates of discount and some little "backwardation" of the Indian rates of exchange. None of the heavier trades can be said to be any brisker, save the Bessemer departments (which are doing a good business all round), but the leading lighter industries are still fairly well engaged. In the iron trade the usual

QUARTERLY MEETINGS

have taken place during the week, but they have passed over without having brought any particular alteration of prices. That at Middlesboro' was dull throughout, quotations being: Pig iron, No. 1, 44/; No. 3, 40/, No. 4, forge, 39/; plates, £6. 10/ to £6. 12/6; bars, £5. 17/6 to £6; sheets, £6; angles, £6. 2/6. Among the exhibits were several lots of Hopkins, Gilkes & Co.'s new iron, made by the Danks process, and tested, successfully, to an extreme degree. At the Staffordshire—Wolverhampton and Birmingham—quarterly meetings there were large attendances, but very little business was transacted, and no alteration of prices was declared. Pig iron stocks were reported large, but the smelters remained firm, and universally upheld their quotations: Hot blast at £4 to £4. 5/; Cold-blast, £5; common, £2. 5/. Finished iron was quiet, and not largely sold. Marked bars remained £8. 10/; sheets (singles), £10; hoops, £7 to £8; nail rods, £6. 15/ to £7. 5/; boiler plates, £8 to £9; best sheets £11 and common bars, £6. Buyers stood out for a drop of 10/, but producers declared their utter inability to give better terms at present.

THE WEEK'S FAILURES

have been both numerous and heavy, although none of any weight have occurred in the iron trade. I select the following list: Frederick Dimsdale, solicitor, colliery proprietor, &c., London and elsewhere, liabilities stated at £300,000, with assets worth £120,000; J. F. & E. Van Camp, contractors, builders, &c., of Kilburn, London, who owe £230,000; a firm in Glasgow, with branches carried on as Cross & Co. at San Francisco and Valparaiso, owing, it is said, £200,000; Messrs. Sauerman & Hatch, merchants, Birmingham, for £90,000; W. A. & D. Jones, of London, &c., jewelers, owing £16,000; William Pitt and Walter Betts, malleable iron-founders, &c., Birmingham, owing £9198, with assets of £4174; and, lastly, of Mr. Henry Brandreth, Liverpool, agent for "Brandreth's pills," &c., owing £50,000, of which £20,127 is claimed by the "Excelsior Medical College, New York."

THE CHANCELLOR OF THE EXCHEQUER,

Sir Stafford Northcote, has been discoursing in his most dulcet strains down at Exeter on free trade and protection, and he has once more pronounced the dictum that England is so thoroughly committed to free trade that she must not "play with protection," even in retaliation against those nations which shut out her productions by high tariffs. The *Times*, in a leader on the speech, takes the worthy Chancellor to task in a mild manner, and naively asks how it is that, although we have championed a one-sided free trade for 35 years, other nations still fail to see the advantages of the plan? The *Times* in fact seems to be in favor of retaliatory tariffs as temporary measures.

THE WIGAN COLLIERY EXPLOSION,

which took place on Tuesday last and caused the loss of 37 lives, again reminds us of the approach of winter and of the dreadful risks which are run by miners and seafarers at times when the barometer is dancing up and down almost continuously. The origin of this particular accident has not yet been traced, the pit having taken fire and the workings having consequently been closed.

THE NEW MANCHESTER GAS WORKS

were commenced last week, near Philip's Park, in that city. They will cover 40 acres of land, and will manufacture 20,000,000 cubic feet of gas daily—double the present quantity. These works will cost over £800,000.

A RAIL ROLLING FEAT

was performed last week at the Bessemer Works of Steel, Tozer & Hampton, near Sheffield, who are executing one of the Indian rail orders. The average output is 1000 tons weekly, but last week no fewer than 1800 tons of hematite pig and spiegeleisen were used for the production of 1570 tons of ingots, which yielded 1400 tons of rails—the largest output of the works since they have been in the hands of this firm.

A STEEL STEAMER

made for the London and Northwestern Railway Co.'s Holyhead and Greenore (Ireland) service, by Messrs. Laird & Bros., of Birkenhead, was launched last week, under the title of the Isabella. She is entirely of steel made by Mr. Webb, at the company's Crewe Works, is 253 feet 6 inches long, 30 feet beam, 14 feet 3 inches depth of hold, with a pair of vertical oscillating engines to work up to 1800 horse-power and give a speed of 15 knots.

A WEALTHY IRONMASTER,

Mr. Nathaniel Caine, has just died at Liverpool and has been interred with much respect. His will has since been proved, and shows the *personalty* alone to be about £500,000. Deceased was a somewhat prominent local politician, and his son has once unsuccessfully contested Liverpool for parliamentary honors.

SHOT AND SHELL FOR RUSSIA

is said to be in course of making by a manufacturer in the North of England. The *Globe* (London), which makes the announcement, hears that this shot and shell is to be sent to the Russian Baltic ports, and that the order, which is large, is to be all completed by the beginning of next spring.

THE WEEK'S FIRES

have been serious, including as they have done, the partial destruction of Inverary Castle (the seat of the Duke of Argyll), with damage set down at nearly £100,000; the burning of a warehouse in London, with a loss of £90,000; the destruction of Whitehead & Co.'s cotton mill, near Oldham, with £25,000 damage; the burning of the color manufactory of Messrs. Adams, Birmingham, with a loss of £10,000; and the burning to death of two policemen at Newcastle-on-Tyne.

THE LABOR MARKET

is somewhat quieter, most of the more serious disputes, excepting that at Bolton, having become of less proportions. The Wolverhampton carpenters still threaten the Germans who have been brought there, and the Manchester men of the same ilk look with much disfavor upon the continued engagement of Americans. The Irish railway strike is somewhat irregularly protracted, but does not seem to be productive of very alarming results. Pending its settlement, the "b'hoys" are amusing themselves by endeavoring to cause a few accidents of no great moment as yet. In Bolton there is said to be shocking distress owing to the strike, scores of young women being in a state of absolute starvation and want.

SCOTCH PIG IRON

has been quiet during the whole of the week, and there have been sales of makers' brands at easier figures. There are still 87 Scotch furnaces in blast, as compared with 116 at the same period of last year, and that their production is outside the demand is evinced by the fact that 803 tons went into store last week, making the total now held by Messrs. Connal 162,911 tons, as against 93,298 tons on the same date last year. Of last week's shipments, 7774 tons were foreign, and the balance coastwise. Up to date, this year's shipments of Scotch pig show an increase of 14 tons, but the foreign consignments have fallen off 15,000 tons. Freights to your ports are unchanged.

Writing on October 12th (evening) from Glasgow, Messrs. James Watson & Co. said: During the past week the warrant market has steadily declined, business done from 53/8 to 53/1, cash, closing this afternoon, buyers 53/1½, cash. As will be seen from the following quotations, makers' prices show a reduction in most cases from our last report. Shipments last week were 10,654 tons, against 11,903 tons in the corresponding week of 1876. We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	54 6	52/
Gartsherrie, "	61 6	54/6
Coltness, "	66/	56/
Summerlee, "	60	54/
Langloan, "	63/	55/
Carnbroe, "	56/	52/6
Calder, at Port Dundas	60/	52/
Glengarnock, at Ardrossan	60/	54/
Eglinton, "	55/	52/
Dalmellington, "	55/	52/
Shotts, at Leith	62/	56/
Kinneil, at Bo'ness	56/	52/

Messrs. Wm. Colvin & Co.'s report is similar in tone.

From the prices current of John E. Swan & Bros., same place and date, I take the following:

Gartsherrie, No. 1 ..... 61/6
Coltness, " 66/
Glengarnock, " 59/6
Eglinton, " 55/
Ballast pig iron, alongside 43/6

THE CLEVELAND IRONMASTERS' RETURNS,

of which I gave a brief abstract last week, for September are in full as follows:

	Furnaces blowing.	Out or d'p'd down.	Built.
Total for September, 1877 .	105	57	162
" " 1876 .	108	55	163

Make of Pig Iron.

	Port of Middlesboro'. Tons.	Total of District. Tons.
Month ending Sept. 30, 1877	123,438	169,246
" " 1876	105,075	163,005
" Aug. 31, 1877	123,501	171,622
Decrease upon August, 1877		2,386
Increase upon September, 1876		6,231

Foreign shipments of Pig Iron from Port of Middlesborough.

Month ending Sept. 30, 1877	33,905
Corresponding month last year	33,786
Increase upon September, 1876	119

Coastwise shipments of Pig Iron from Port of Middlesborough.

Month ending Sept. 30, 1877	42,542
Corresponding month last year	38,464
Increase upon September, 1876	4,078

Makers' Stocks.

August 31, 1877 138,107	220,971
September 30, 1877 133,599	228,139
Decrease upon August, 1877	1,832

Stock in Warrant Stores.

August 31, 1877	24,950
September 30, 1877	31,030
Increase upon August, 1877	6,080

Abstract.

Decrease in make upon August, 1877	2,386
Decrease in makers' stocks upon Aug., 1877.	1,832
Increase in stock in warrant stores upon August, 1877	6,080

TRADES OF SHEFFIELD.

The course of business in most branches of the local iron trade rules quiet, although there are indications of a better state of things in one or two quarters, where any change is certain to be seen at once. It had been supposed that the Board of Trade returns would have shown an improved state of things, but such does not appear to be the case, generally speaking, although in one or two items, specially interesting to this locality, there has evidently been an improvement. At the same time it is clear that the ordinary iron trade has not experienced any revival, and in other aspects of the question there is abundant evidence that it is not as yet "out of the wood." That some houses hereabouts feel the pressure is evinced by the fact that the Northfield Iron Company (Limited), near Rotherham, has given 14 days' notice of cessation of contracts to all its employes, a step which is in all probability preliminary to a reduction of wages. Messrs. Thomas Firth & Sons, the celebrated cast steel manufacturers and producers of ordnance, are also stated to have given the 400 or 500 men employed in their gun works notice to leave work in a month from Saturday last. This latter movement is of especial significance, seeing that Messrs. Firth produce almost all the steel tubes for the Woolwich "infants" and other large guns, not to mention such orders as they have been in the habit of receiving from other governments. Their machinery for dealing with all work of this description is probably unsurpassed, if equalled, in this or any other country. In ordinary times of war Messrs. Firth have invariably been overwhelmed with work, much of which consisted of rolling and boring rifle barrels for the Birmingham arms makers. In the present war this is not the case. Neither of the combatants is obtaining ordnance or rifles from this country, so that in the very midst of war we have the strange spectacle now indicated brought under our notice. I presume, however, that Messrs. Firth will effect reductions of wages only in their gun department. In this country rifle barrels and ordnance have always been made of cast steel, but it is asserted that the American manufacturers are now making use of Bessemer material, which is so much cheaper that their competition completely cuts out the English made goods. If such is indeed the case, there should be no particular reason why we should not also use up Bessemer material, for rifle barrels at any rate.

Reverting to raw iron branches, I am unable to report any considerable change in any direction, either in respect of ores or pig, both of which are hardly so steady as last week, in sympathy with the faltering tone of the Scotch and Cleveland markets. The ores mostly imported here for general uses are North and Mid-Lincolnshire, and Northamptonshire, which are smelted mixed for various ordinary pigs, or are used—as at Thorncliffe, Elsecar, &c.—in conjunction with native black ores. For Bessemer purposes and for the manufacture of spiegeleisen, Spanish, Irish, and Algerian ores are being imported, but not in any particular bulk. The Spanish tariff on exported ore is likely to prove very detrimental to the full and thorough working of the Bilboa mines, in which English capital has been so largely invested.

I notice that the monthly report of the Leeds Chamber of Commerce, in speaking of their local iron, &c., trades, says: "The common iron trade continues as dull as ever, but there is an improvement in the demand for the best iron, and more inquiry for railway wheels, axles, &c. Some of the locomotive makers are pretty full of work, but others have very little in hand. The machine trade is quieter than before; even makers who have been busy with specialties are participating in the general depression. There is no improvement to report in the tool trade. In cut nails a fair business is maintained." At the larger works here there is a steady call for engineering requisites, such as locomotive frame plates, large tires, &c., and a rather better call for boiler plates both of steel and of charcoal iron. Both classes of plates are also selling fairly well for shipbuilding purposes, on the Clyde, Thames, Humber and Mersey. The cast steel works are not what can be termed busy, but at most of the leading establishments there is just sufficient work in hand to keep certain sections of the works going on in an easy fashion. There is a fair call for crucible steel castings for marine engineering and miscellaneous purposes, for railway crossings and switches, for good tool steel and for sheets. The home trade is decidedly the best, but there are orders in course of execution for the United States, German, Dutch, Australian, Russian, Italian and Indian markets. The total make of the trade is, nevertheless, vastly below even a low average of former times. The Bessemer branches are without change to note. Much of the local output of rails is for India, and is being sent by canal to Hull for shipment thence, as being cheaper than railway freights. I notice, too, that crossings, switches, &c., are being made here for the Bombay, Baroda and Central India Railway, besides other Indian roads. In the hardware branches there is more animation, and a general disposition to presuppose a rather more favorable autumnal trade than had been anticipated. This is the case in the cutlery and file trades. For edge tools, sheep shears and some classes of files there is a better inquiry on colonial account. In many quarters the new rules of the railway companies as to the conveyance by goods trains of parcels under 500 lbs. in weight, are creating much annoyance, as in addition to the increased charges there is the trouble of declaring specifically the contents of each particular package. In some goods, too, the rise in the charges is rather considerable—say 20 per cent. The coal market remains steady, so far as household qualities are in question, but slack and other small kinds are not moving off very rapidly, owing to the additional production of those qualities of fuel caused by the larger sales of house coal. Steam coal, too, is quiet now that the northern shipments are about at an end.

A GREAT GALE

has passed over this town and most part of the country during last night, and is stated to have done much damage. We have no particulars as yet from other districts, owing to the whole of the telegraph wires being broken, but rumors are coming in showing that the storm has been very destructive. Had it arrived earlier, we might have thought it was the cyclone which visited your coast on October 5th and 6th. With respect to

AMERICAN TRAMWAY CARS,

a correspondent writes to one of the papers in the following strain: "Only a little while ago I was in Hull, and my attention was directed to the tramway cars recently supplied to the Hull Tramways Company. I was very much pleased with them in every way, more especially with the pretty one-horse cars, which work very smoothly and comfortably. But, to my astonishment, I found that all the cars were of American build. On inquiring from Alderman Bannister, who is the life and soul of the Hull

Tramways Company, why he had not come to Birmingham for the cars he wanted, he informed me that he had a very good reason indeed, viz., that he had been able to buy the cars, delivered in Hull, for an average of £35 per car less than the English prices." On referring to your export list for the earlier part of this month, I find corroborative evidence of the truth of this statement in the shape of shipments of car wheels direct to Hull. Our principal car manufacturing company is, I believe, the Starbuck Co. of Birkenhead.

STAFFORDSHIRE AND BIRMINGHAM

are quiet, so far as the iron trade is in question, particularly as regards finished iron. The orders in hand are of very small size, and only serve to give employment on about half time. Thin sheets, for stamping and other hardware purposes, are in fair request, and there are some tolerably good export orders for plain and galvanized sheets in the hands of the larger houses. The stocks of pig iron are heavy, and move off slowly. In connection with the hardware branches I may state that the old-established Birmingham house of T. W. Harrold, Amercan merchant, has been absorbed into that of Alfred Field & Co., of New Edmund street, in the same town, and will hereafter be carried on under the title of the latter. In some of the lighter trades there is a rather more cheerful feeling, a state of things which may possibly be the outcome of the new quarterly orders, or it may have been brought about by the recent almost general, albeit slight, reductions of quotations. Trade with the United States is said to be better, and good orders have come to hand from South America—chiefly from Brazil and the River Plate. I may here state that the failure of Messrs. Sauerman & Hatch, merchants (alluded to in a former paragragh), has arisen out of complications in the Chilian trade. From the Spanish West Indies and India most recent reports are more hopeful than of late.

SOUTH WALES AND MONMOUTHSHIRE

are quiet, and none of the works are more than one-half employed, with the exception of one or two Bessemer places. At some establishments Australian rail orders have been placed, but they are not of large proportions. Last week's exports from these ports of iron and steel were 7532 tons, and of coal, 87,533 tons. The former was mostly for India, Sweden and the Cape, but included 300 tons of "spelter iron" to New York, and 37 tons of tin to the same port. In the tinplate branches there has been no especial change, but prospects are said to have recently become rather brighter.

THE FATE OF CYFARTHA

is characteristically explained in a letter just forwarded by Mr. Crawshay to one of his workmen, in response to an inquiry of the latter. The letter runs thus: "Trade is worse than ever it was, and I see not the slightest chance of Cyfartha starting again. I believe if it ever does start it will be under different circumstances, as it will require a large sum to be laid out in improvements. I am too near my grave to think of doing anything of the sort. I think so badly of trade altogether that I have no wish to see my sons remain in it. I do not think I can live very long, and if I can, shall sell the works before I die. There is nothing now to bind me to them, for I have been estranged from them by the conduct of the men. I always hoped to die with the works going, and the same feeling among the men for their employer; but things have changed, and I go to my grave feeling I am a perfect stranger, as all my old men have gone, or nearly so." This sounds despondent, but Mr. Russell Rea, the Liverpool agent for Mr. Crawshay, writes to say that although the Cyfartha Iron Works are idle, the collieries are busy enough, and are producing a large tonnage of steam coal for Cardiff, London, Liverpool, &c.

A GREAT COLLIERY SCANDAL

is talked about in South Wales, and is thus referred to by the Cardiff *Western Mail:* "We understand that steps are now being taken in London by gentlemen of experience, who are well advised, to investigate the circumstances connected with the recent sale of a large and important group of collieries in South Wales to a limited liability company, which is at the present moment in a very deplorable financial condition. These gentlemen are said to be in possession of sufficient facts to open out a startling history of the inception of the transaction and the enormous profit which was made, as they allege, corruptly, by the venders. It is further stated that at an early date a meeting of the local shareholders will be called to obtain their support to the proceedings which are about to be taken." I believe I am correct in stating that this company was started in 1873, that its capital is £361,450, and that only one dividend (of 12½ per cent. for the first year) has ever been paid.

THE METAL MARKETS

have been rather brisker during the past week, and more business has been done. Von Dadelszen & North say: *Copper* generally has been quiet. The quotation for Chili bars is rather higher, and a moderate business has been done in G. O. B. at £66 to £66. 10/, according to brands; good to best brands at £67 to £67. 10. Three cargoes of furnace stuff have been sold at 12/3 for ore and 12/6 for regulus. The charters for second half of September are telegraphed as 2400 tons, of which 850 are ore and regulus. Nothing to report in Australian; Wallaroo quoted at £80; Burra, £74. English tough quoted at £71. 10/ to £72. 10/; select, £72. 10/ to £73. 10; sheets, £77 to £78. *Tin.*—A considerable business has been done at higher rates; market closing firm, at £68 to £68. 10/ for both Straits and Australian. Banca quoted, 42fl.; Billiton, 41fl.; English ingots, £73 to £74. *Tin Plates* continue in moderate demand. *Lead* slightly easier; soft English pig, £20. 5/ to £20. 7/6; soft Spanish without silver, £19. 15 to £19. 17/6. *Spelter* quoted £19. 5 to £19. 10. *Sheet Zinc.*—Of 200 tons offered at public sale, 145 tons sold at £22. 10, net. *Quicksilver* has advanced to £7. 15/ per bottle. *Antimony*, £48 to £49.

The *Mining Journal* remarks: "If money had been less easy and abundant, and the facilities for financing more difficult, the decline in our markets would doubtless have been quicker and greater; but as it has been otherwise, the cheapness of money has materially contributed to the preservation of prices, and the existing interest of producers has been considerably benefited. *Copper.*—A moderate business only has been transacted, and prices, although decidedly easier, have undergone but trifling alteration. The advance in the Bank rate will, of course, have its effect presently, and the decline in the Indian exchange must shortly tell upon manufactured. *Lead.*—This market is steady. I. B. brand advanced to £20. 10/. *Zinc.*—145 tons out of 200 tons offered at public sale yesterday realized £22. 10/, net, being the same price as last. *Quicksilver* has had a sudden turn this week. On Monday and Tuesday orders of great magnitude, partly for consumptive and partly for speculative purposes, were placed at £7. 5/, and these purchases having materially decreased the stock in first hands, the importers raised their price on Wednesday to £7. 10/, and again on Thursday to £7. 15/, at which figure a moderate business has been transacted."

The directors of the Great Laxey Lead Mining Company (Isle of Man) have declared a dividend of 50 per cent. upon the paid-up capital, besides carrying over £1500 to the reserve fund, which remains at £5074, after paying £7000 for a new steamer and £5000 for the failure of the Buryport Company.

The official report of the London Metal Exchange is as under: *Copper* unchanged; G. O. B. Chili bars, £66 to £66. 10/.; Wallaroo quoted £80; Burra, £74 to £74. 10/; English tough, £71. 10/ to £72. 10/; best selected, £72. 10/ to £73. 10/; sheets, strong, £77; Indian, £76. *Tin* steady, with sales of Australian to the extent of about 100 tons, at £68 to £68. 10/, on the spot; also, 20 tons, 3 months' delivery, £68. 10/; Straits quoted £68. 10/; English ingots, £73 to £74. *Scotch Pig Iron*, 53/1½, cash. *Lead* quiet; English pig, £20. 2/6 to £20. 5/. *Spelter*, £19. 5/ to £19. 10/, for ordinary brand. *Quicksilver*, £7. 15/. *Antimony*, £48.

Latest Liverpool prices are:

Iron, f. o. b. in Liverpool, per ton.

	£ s. d.		£ s. d.
Merchant bar	6 2 6	to	6 10 0
" in Wales	5 12 6	to	6 0 0
Staffordshire	7 0 0	to	9 5 0
Hoop	7 10 0	to	8 10 0
Sheet	8 10 0	to	9 10 0
Nail rod	7 0 0	to	7 10 0
Bar, best crown	7 0 0	to	8 0 0
Boiler plates	9 0 0	to	10 0 0

Tin Plates, f. o. b. in Liverpool, per box.

	£. s. d.		£ s. d.
Charcoal, I. C	1 1 6	to	1 3 6
Coke, I. C	0 17 6	to	0 19 6

Copper, delivered in Liverpool, per ton.

	£ s. d.		£ s. d.
Bolt and sheathing	82 0 0	to	0 0 0
Tile	75 0 0	to	0 0 0
Tough cake	76 0 0	to	0 0 0
Best selected	77 0 0	to	0 0 0

German Exports to the United States.

The following is translated from the *Augsburg General Gazette*:

The Prussian Archives for Commerce, from the annual reports of the Bureau of Statistics at Washington, publishes a special collation of the commercial relations between Germany and the United States during the fiscal years 1872 to 1876, ending with the 30th of June. The total export of Germany to the United States for 1876 amounted to $35,448,117, against $40,800,000 for 1875, $45,100,000 for 1874, $61,400,000 for 1873 and $42,600,000 for 1872. The greatest part of the export consists of manufactures, among which cotton, woolen and silk manufactures, articles of fashion, watches and gloves are prominent. These six articles, with slight variations for the years 1872 to 1876, amounted to from 55 to 61 per cent. of the entire dutiable import into the United States. The value of the export from the United States to Germany for 1876 amounted to $52,200,000, against $53,700,000 for 1875, $65,700,000 for 1874, $63,500,000 for 1873 and $41,200,000 for 1872, and embraces predominantly raw materials and goods partially manufactured. Of the articles sent by the United States to Germany, cotton, meats, refined petroleum, tobacco, leather, furs and grain (Indian corn, rye and wheat) largely predominate. Like them, the long series of the then following articles are nearly all such as, strictly speaking, do not belong to American industry. The eight classes of goods mentioned for the years 1872 to 1876 yielded always 80 to 85 per cent. of the total export of products of the United States bound for Germany.

The most remarkable phenomenon of these statements is the continuing decrease of the German export ever since 1873. They have essayed to find the cause for it partly in the stubborn protective tariff system of the United States, partly in the diminishing of the capacity of consumption there produced by the business crisis, and partly, too, in the free trade commercial policy of Germany. However, two points are here entirely overlooked. First, the great shrinkage in value of most goods within the last years is bound to bring the value of the exports back to their original figures, when compared with the years of the high prices, even though there is not as large an export. The export from the United States to Germany since 1874 is considerably diminished. The diminution of the German export, however, especially as against the years 1872 and 1873, is more particularly explained by the fact that pending and immediately after the French war, the export experienced an immense increase, because at that time French industry was bound partly to suspend its export, while the Americans purchased from Germany a large portion of the goods previously imported from France. When the French sources were reopened, the American purchasers returned mostly to their old purveyors. We may not deduce from this that the German manufacturers (except some individual specialties) did not give them full satisfaction. The business connections are rather so constituted that an old connection, like the French, is not so easily abandoned. Even with equal prices and merchandise as good, the new competitor has to stand back against the old connection. Therefore, German export in the last years had considerably to diminish, and the very German manufacturers who export their goods were not deceived in this, that they had to lose a large part of the business having come to them accidentally in a French district, as soon as the French recommenced to export.

However, in spite of the inevitable diminution of the last years, evidently to be foreseen, the export to the United States has by no means declined, as is frequently assumed, and if the explanation is found in the "Prussian Archives for Commerce," that generally and as a whole the export tables exhibit but remainders of the sale, extremely large, realized by Germany previously in the United States, that assertion is directly refuted by the American statistics. As late as 1876 the German export to the United States had reached such figures as they had never attained previous to 1870. Excluding the years of the secession war, from 1862 to 1865, and the years of the war 1870 and 1871, the figures were as follows:

1858 to 1861	on an average		$16,400,000
1866 to 1869	"	"	25,100,000
1872 to 1875	"	"	45,300,000
1876	"	"	35,400,000

These figures go to prove that the German export for the years 1872 to 1876 and even in 1876, were considerably higher than in former periods, when the German tariff contained more and higher duties than to-day. More especially in the days previous to the reform effected by the Franco-German treaty of commerce, the export did not amount to one-half of the export in 1876.

Not only *per se*, but also in relation to other countries, the German export to the United States has not lost but gained ground. The value of the imports to the United States is stated to be (in millions of dollars) as follows:

	Altogether.	From Gt. Brit'n.	From France.	From Germ'y.
1858 to 1861	379.7	124.8	38.5	16.4
1866 to 1869	418.0	170.0	29.5	25.1
1872 to 1876	586.0	192.5	48.7	45.2
1876	474.6	126.8	51.5	35.4

Of the entire import for the years 1858 to 1861, 32.8 came from Great Britain, 10.1 from France, and 4.3 per cent. from Germany, while in 1876 Great Britain supplied but 26.2 per cent. of the total export, France but 10.6 per cent., and Germany 7.4 per cent. Even in 1876, a year by no means favorable, the German export retained a proportionately considerable extension of the market.

This enlargement would appear much more considerable in the commercial statistics of America, if the figures of those statistics really accomplished the object they have in view. But it is by no means the case, because of the manner in which the commercial statistics are prepared. Thus the import is collated according to the invoices, which the foreign exporters had to submit to the legislation of the American consuls. The manufacturers in Alsace have mostly their own houses or commission houses in Paris, which attend to the sales in France and the exports. The American importers purchase the Alsatian goods by houses in Paris and the invoices are legalized by the American Consul in Paris. In this way the entire exports of cottons from Alsace to the United States appears mostly as a part of the French, and not of the German export. Germany, as now constituted, exports, then, considerably more in fact than stated by the American statistics, while the enlargement above named of its export is by no means to be attributed to the influence of the industrial products of Alsace.

Besides, it must not be overlooked that the inevitable consequences of the high tariffs *ad valorem* of the United States are that the values of the goods to be imported are alleged in figures as moderate as possible. As for all other countries, it holds good as well for Germany. On that account you cannot deduce the true figures of German export from the figures of the American statistics. As far as they exhibit a comparison of the different years, they present the conclusion that the German export, though bound, of course, to be behind in the last years in regard to value, still shows a favorable development compared with the times before the Franco-German war.

Direct Trade With Italy.

The establishment of direct commercial intercourse between the United States and Italy, gives promise of large ultimate benefit to both countries. The head of the late Italian Centennial Commission, Count Dassi, who has remained in this country to promote larger and more profitable commercial relations between the United States and his own country, has been for many months engaged in disinterested service having this end in view, and has overcome many obstacles which would have discouraged men of less enterprise and perseverance. There has already been a beginning, and two steamers have made the round trip between Philadelphia and ports on the Italian coast with full and profitable cargoes. Italy, from her geographical position, enjoys a large advantage over the countries of the North in reaching the Eastern trade through the Suez Canal, and her commercial future is full of large possibilities which, if realized, will only repeat those great achievements in the past that faded with the discovery of the route to the East *via* the Cape of Good Hope. The Suez route restores to Italy the advantage she then lost. We learn from Count Dassi that the prospects of a regular steam service between this country and Italy are very good, and we certainly hope our merchants will extend it every encouragement. The fact that the industrial future of this country depends in great degree upon the development of our export trade, is becoming well understood, and whatever tends to open new markets for American products and manufactures, or to encourage direct exchanges with other nations, merits the liberal co-operation of all who are interested in promoting the national welfare. We regret that, owing to the crowded state of our columns, we cannot consider the subject more fully in this issue.

Life Insurance Association.—The employes of the Russell & Erwin Mfg. Co. have started, on something of the plan of mutual benefit associations, a miniature life insurance company. The membership will be confined to the employes of the house. They have elected the following officers: W. B Munn, president; Geo. A. Hamilton, vice-president; Wm. H. Donaldson, secretary and treasurer.

British Iron and Steel Institute.

Second Day's Proceedings Continued.

MANUFACTURE OF COKE.

Mr. A. L. Steavenson, Durham, read a paper "On the manufacture of coke in relation to the iron trade of the North of England." Upon the subject of the Cleveland ironstone, the writer has already had the honor of giving the members of this institution his views, and a review of the facts appertaining to the supply of the requisite fuel, it is hoped, will also be acceptable. The coking coal field of South Durham may be taken as lying almost entirely to the west of the main line of the North Eastern Railway, in the whole length of its course from Bradbury station on the south to Gateshead on the north, and the length of it averaging 23 miles by a width of 11 miles, gives us the original area of 253 square miles: from this, after deducting the quantity already worked and loss in hitches and working, the writer is of opinion that there remains available sufficient to maintain present yield, including coal requirements, for a period of 125 years. But the present demand of 4½ million tons of coke gives no sign of being stationary; on the contrary, since we are told that the amount used per ton of pig iron is not likely to be reduced from its present average of 23 cwts., we may look upon each succeeding yearly increase in the manufacture of pig iron as still further hastening the approach of the final blowing out, unless something more can be accomplished in mitigation of much that is now done, and which may be fitly termed a "burning of the candle at both ends." In 1858, the writer, in a paper read before the North of England Institute of Mining Engineers, pointed out how the mere application of plain flues and chimneys, by protecting the coke ovens and steadying the draft, effected a saving of 3 per cent. in the coke made, in addition to the prevention of smoke and smoke damage to a considerable extent; but although attempts had been then made to utilize the escaping heat, nothing successful had been accomplished, and during this interval of 20 years, which has done so much for the economy of the blast furnace, constant efforts have been made by coke manufacturers, especially by the larger firms, not only, first, to save the great loss in heat incidental to the expulsion of the hydro-carbons in the original coal, but also, secondly, to make available much of the coal which, if used direct from the pit, would be unsuitable from its impurities for the blast furnace. He proceeded to show how far these two objects have been attained. At the Browney Colliery the ovens are in double rows, back to back as usual, but the flues between are much larger, averaging 6½ feet high and 3 feet 6 inches in width. To each chimney of 120 feet in hight are connected about 100 ovens, an equal number on each side, and the flues and boilers, four in number, are so arranged that the heat can be carried past when cleaning or repairs are requisite—the small connecting flues being built as compact and tight as possible, and thus the remarkable freedom from smoke seems owing to the air-tight and perfect character of the flues, the small amount of surplus air present not cooling the gases to a point below which the hydro-carbons escape imperfectly burnt. This has been tested by admitting a large surplus of air, when smoke was immediately evident. Now, as the result of this arrangement, no coals whatever are used for boiler purposes, and the produce of the pit is drawn from a depth of 100 fathoms, and the water pumped, whereas before this system was adopted, 600 tons per fortnight was the amount virtually wasted; and at another colliery belonging to the same firm, and where the small is valuable for coking purposes, the advantages of the system described are equally evident. In order to ascertain the amount of heat available for evaporative purposes, the first step was to measure the volume and temperature of the gases passing to one pair of boilers from fifty ovens coking at the rate of 230 tons of coal in eighty-four hours. The temperature was found to be 1500 deg. Fahr. The volume, measured by taking the velocity of the current in a given length of the flue was ascertained by introducing sodium at one point, and noting the time required to affect a flame, made by putting a little coal into the flue, spectroscopically at another, to be 1187 feet per minute, which multiplied into the area of the flue 24 square feet—28,488 cubic feet per minute. This exceeds by 7205 cubic feet the theoretical quantity of the gases, supposing that only just sufficient atmospheric air is admitted to effect the complete combustion of the known weight of material lost in coking 230 tons of coal; and this 7205 cubic feet represents roughly the unavoidable excess of air used in coking, and the presence of which was evident by the ease with which a piece of charcoal burnt when lowered into the flue. He next spoke of the heat commonly wasted, and said that in the plan described but a small percentage of the total heat generated in the ovens is utilized, although if this was carried out throughout the district of South Durham, where in colliery boilers not more than 6 lbs. of water on an average is evaporated per 1 lb. of coals, we should have a saving of 1,085,869 tons of coal per annum, or a money value of £271,457; but this by no means represents the total saving to the colliery owners; foremen are entirely avoided, with the exception of one man on each shift to attend the boilers, so that the total economy which would be effected, were the system generally adopted in the county, would be fully £300,000 per annum. The second part of the subject for consideration is the means adopted for enabling much of the coal of inferior character and containing a high percentage of ash to be used as furnace coke. The Brockwell seam of coal, which extends over the greater part of the district, is one of the purest and best known coals for coking purposes, but already many others of a quality inferior to it are being worked, and by crushing and washing rendered fit for use. By means of crushing not only small, but to powder, very great advantage has been proved to result, the rough "gas coke" looking pieces being entirely avoided, the coke altogether being much harder, and the ballast or refuse reduced from 2 to 5 per cent. of the whole. Thus experiments made to test the benefit of coal crushed to powder showed as a result:

	Percentage of coke.	Percentage of ballast.
When crushed	59	2
Not crushed	58	5

By ballast is meant not only ash, but refuse small coke also. The value of hard coke to the iron manufacturer has been shown to consist in much more than its mere mechanical strength and ability to bear the weight of the burden. Thus Mr. Bell says: "I have proved, however, that the carbon as it exists in different qualities of coke is not influenced in the same degree by the solvent power of CO_2, that of the soft description, known as black ends, being more easily attached than the hard silvery looking kind formerly mentioned." This can readily be understood when we think of the relative combustability of a piece of soft gas coke in a fire grate, compared with a similar quantity of hard dense coke or a piece of gas carbon. It is no doubt a natural consequence of the physical state of the material. Owing to some peculiar condition of the coals at Browney Colliery, attributed to the presence of basaltic whin in the immediate vicinity, it was found impossible to make a coke of sufficient density, although nothing was traceable in the analysis, but, by the application of a disintegrator, which will reduce to powder nearly 40 tons per hour, at a cost of not more than ½d. per ton, such an improvement has been effected that the coke is now almost all that can be desired. No change can be detected in the analysis, the chemical composition being such as to make it impossible to trace any cause for the previous imperfection. The washing of coal is best done in an open trough, say 60 feet long, with stoppers or ledges to catch the stones and dirt, and stirred up constantly by hand rakes while the water flows over it. It is an old invention, and has been of great service. No doubt many have a prejudice against washed coke, and say it is never so good as the other, forgetting that coke made from unwashed material is almost always made from a superior original coal. By this means large quantities of the hitherto neglected coal in the eastern districts of the country will no doubt be made available. It seems needless to add more, beyond recording that the total coke ovens now in operation number about 14,000, forming a branch of manufacture which gives employment to about 2000 exceptionally steady hard-working men, and a useful investment for at least a million sterling.

Mr. I. L. Bell said he could confirm to the fullest extent the uncertainty which attends the quality of coke. That was to say, that coke, which apparently one would say was really admirably fitted to be used in blast furnaces, was apt to be productive of great disappointment. He had had abundant and most costly experience of that. Coke made under the circumstances cited by the writer of the paper appeared all that could be desired chemically, and apparently not very bad physically, yet when they came to use it in the blast furnace they found it to be something like 15 to 20 per cent. inferior to coke; no better, chemically speaking. They had to treat it as Mr. Steavenson had described, and although he (Mr. Bell) did not pretend to say that the coke, even now, was equal to the very best in the county of Durham, yet, nevertheless, it was sufficiently good to enable them to use it without much inconvenience to themselves.

The Tunnel Beneath the British Channel.—The London *Daily News* says: Operations connected with the submarine tunnel have already been commenced on the other side of the Channel, several pits having been sunk to the depth of 110 yards. At the same time the French and English committees have definitely drawn up the conditions of working for the route. The property of the tunnel is to be divided in half by the length—that is to say, each company will possess half of the line, reckoning the distance from coast to coast at low tide. Each company will cover the expense of its portion. The general work of excavation will be done, on the one hand by the Great Northern of France, and on the other by the Chatham and Southeastern companies, the two latter having each a direct route from London to Dover. All the materials of the French and English lines will pass through the tunnel in order to prevent unnecessary expense and delay of transhipment, as in England and in France railway companies use each other's lines, and goods can pass from one line to another without changing vans. It is understood that an arrangement will be established for a similar exchange of lines between all the English and continental railway companies when the tunnel is completed. The tunnel will belong to its founders. At the expiration of thirty years the two governments will be able to take possession of the tunnel upon certain conditions.

A Lubricating Plow.—We read in *Mines, Metals, Arts, etc.*, of an invention which is said to be practical, but which we should prefer to see at work before investing therein. It "consists in the combination with the mold-board of a plow, of a fountain attachment, introduced between the mold-board and share; also lubrication from the colter on its sides, and to the plow point, through which oil, water, or other liquids may be supplied, whereby the face of the mold-board is caused to pass smoothly and easily through the soil, without the sticking and adhering of the soil. The fountain consists of perforations, or thin slit openings, between the mold-board and the share, which are connected by proper tubes with a tank of oil (or water, which is just as good) to a reservoir, which may be attached to the handles or beam, or, perferably, to a tank or cask on the riding wheels of the plow, whence the lubricating liquid is supplied to the tubes and oozes or passes out through the slits into the colter, share and mold-board, and permitting not only sticky or waxy land to be turned over and broken up, but as well applies to the hard clay soils of any country, in the time for summer and fall plowing." It is said further that "the reservoir may contain 50 gallons of water, or a day's supply in plowing one and a half or two acres." But what do the horses think of the draft of a plow weighted down by 400 pounds of water?

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THE SCROLL SAW.

Length of arms	20½ in.
Length of sweep for work	17 "
Height of table above floor	31 "
Diameter of table	6 "
Length of stroke	1⅛ "
Diameter of driving wheel	12 "
Diameter of balance wheel	6⅛ "
Diameter of emery wheel	3½ "
Number of strokes of saw per minute	1,000
Number of revolutions of emery wheel per minute	1,000

These speeds are made with a tread of 150 per minute.

Weight of Scroll Saw, 30 lbs.

THE LATHE.

Weight	6¼ lbs.
Length of ways over all	15¾ in.
Distance between centers	9 "
Swing	3 "
Length of slide rest	4½ "
Height of head and tail stocks above ways	2⅝ "
Diameter of cone pulley	1¼ "
Number of revolutions per minute	7,000

THE CIRCULAR SAW.

Diameter of saw	½ in
Length of saw arbor	2¼ "
Height from floor to table	33 "
Size of table	4x5½ "
Number of revolutions per minute	7,000
Weight	1½ lb.

Total Weight of Combination, 36 3-4 lbs.

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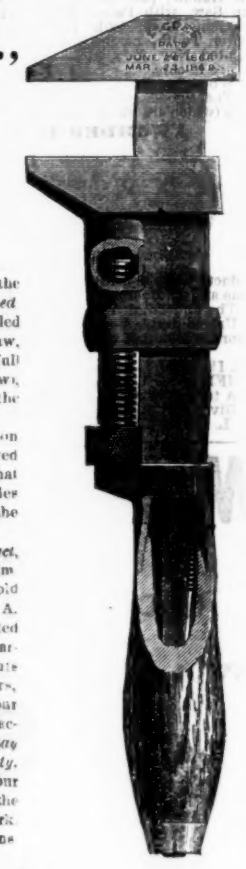

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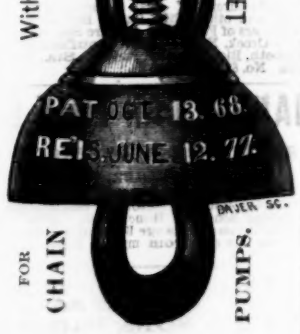

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The undersigned having examined the product herein described, respectfully recommends the same to the United States Centennial Commission for award, for the following reasons, viz:
Report: "Being of very Superior Quality and of great Practical Utility." DANIEL STEINMETZ, Signature of the Judge.

J. D. IMBODEN, of Virginia, CHARLES STAPLES, of Maine, G. L. REED, of Penn., } JUDGES.
J. DIFENBACH, of Germany, DAVID McHARDY, of Scotland, D. STEINMETZ, of Phila. }
A true copy of the record. FRANCIS A. WALKER, Chief of the Bureau of Awards.
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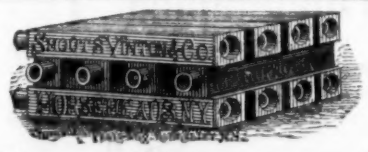
FIRE BRICK

of reliable quality for all purposes, manufactured of the best New Jersey Fire Clays. Also, Architectural Terra Cotta, Fire Clay, Fire Sand, Kaolin, Ground Fire Brick and Diamantine Building Brick.



Shoots, Vinton & Co.,

MANUFACTURERS OF

A Superior Quality

OF

WOODEN

WATER PIPE

AND

CHAIN PUMP TUBING.

Factory, Horseheads, N. Y.

NEWLIN & YARDLEY

No. 337 Market Street,

PHILADELPHIA.

Hardware Merchants

AND

MANUFACTURERS' AGENTS.

SOLE AGENTS FOR

Steel Wood Screws, and **Set** and **Machine Screws.**

Florence Tack Co.'s Tacks, Shoe and **Finishing Nails.**

Columbia Lock Co.'s Locks and **Knobs.**

AND

Cast Steel, Chain & General Hardware.

Staple Hardware now below Cost.

To Hardware Dealers:

Most if not all of the following named articles being now below the cost of manufacture, we would recommend their purchase by those whose stocks are low.

The prices attached are for *prompt cash only,* and the goods are guaranteed to be first quality. For a large proportion of those named, as well as for many others comprised in Hardware Jobbers' stocks, we are Manufacturers' Agents. For *all* we pay "spot cash," and, not employing travelers to sell our goods, we believe we can afford to sell for cash at lower figures than are current in the general market. We shall be glad to quote by mail on any goods that may be needed not enumerated in the list. The prices being unnaturally low, we do not guarantee against advance.

NEWLIN & YARDLEY.

Rim Locks, 4 in. full size, with cam fastening and polished bolts	₩ doz	$1.35
Rim Locks, 4 in. full size, with cam fastening and not polished bolts	₩ doz	1.10
Rim Knobs, Mineral	"	.90
" " Porcelain, Jap'd Rev	"	1.25
" " Porc'r Rev	"	3.25
Japanned Hat and Coat Hooks, No. 75	₩ gross	.72
Bronzed " " No. 80	"	.75
Window Pulleys, 1¾ in., No. 5, Papered	₩ doz	.15
" " 1¾ in., No. 15, "	"	.20
Turnbuckles for Frame	₩ gross	3.25
" " Brick	"	3.00
Pittsburgh Pat. Thumb Latches	"	3.75

Northampton Shell Bolster Cocoa Butcher Knives—

5⅛	6,	6½,	7,	8 inch.
$1.75	1.85	2.10	2.35	2.90

Through Tang Cocoa Butcher Knives, no Bolster—

5,	5½,	6,	6½,	7,	8 inch.
$1.10	1.25	1.35	1.45	1.65	2.00

J. Russell & Co.'s Bolstered Cocoa Handle Knives and Forks, No. 1526	₩ gross	$8.50
J. Russell & Co.'s White Bone Knives and Forks, No. 109	₩ gross	8.25
Strap and T Hinges	dis 60&10 %	
Mallory, Wheeler & Co.'s Pads	310, 90c.; 1000,	$1.40
Metal Head Wall Gimlets	₩ gross	2.75
Hammered Oval and Round Pans	₩ ℔	18½c
Mirror Face Sad Irons	"	23½c
Eddy's Ass Skin Tapes, 50 ft	₩ doz	$3.75
Philadelphia Files, warranted hand made	dis 30 % from list	
Morton's Spring Balances, 24 lbs., small		$3.25
" " 24 " regular		1.10

Socket Framing Chisels—

⅛,	⅛,	⅜,	1,	1¼,	1½,	1¾,	2,
3.75	3.75	4.40	5.00	5.70	6.40	6.90	7.50 net

Socket Firmer Chisels—

⅛,	¾,	1,	1¼,	1½,	1¾,	2,
2.90	3.50	3.87	4.20	4.40	4.75	5.00 net

Curry Combs, 6 Bar, Bronzed		$1.20
" 8 " "		1.35
" 6 " Black		1.10
" 8 " "		1.25
Soapstone Slate Pencils	per M	2.50

Hard Frame Slates—

5x7,	6x9,	6½x10,	7x11,	8x12,	9x13,
32c	44c	47c	50c	62c	72c ₩ doz net

Close Link Coil Chain—

3-16	¼,	5-16,	⅜,	7-16,	½,
10½c	8½c	7½c	6½c	6	5½c ₩ ℔ net

Baldwin's Warranted Cast Steel	₩ ℔	12½c
In ton lots, 12c ₩ ℔.		

Philadelphia Coal Hods, Oval or Fancy—

	14,	15,	16,	17 inch	
Japanned	$2.80	3.20	3.60	4.00	₩ doz net
Galvanized	14,	15,	16,	17 inch	
	$4.20	4.60	5.20	5.60	₩ doz net

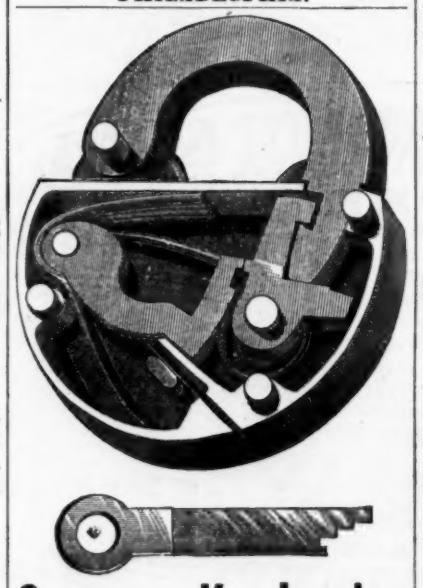
Florence Tacks, Shoe and Finishing Nails	List and disc't on application	
Steel Wood Screws	dis 60&10 %	

Price guaranteed the same as that of the best Iron Screw makers, and quality superior to any Iron Screw made.

Also Round and Flat Head Blued and Brass Screws, and Steel Machine and Set Screws and General Hardware.

Newlin & Yardley,

PHILADELPHIA.



Common Key Locks

AND

DIAL BANK LOCKS,

made on the new principle, which greatly simplifies their construction and at the same time makes them absolutely proof against picking. $300·00 is hereby offered to the person who will fairly pick the Key Lock, either the Mortise Lock or the Padlock; and $500·00 for picking the two-tumbler Dial Bank Lock.

These Locks are made of bronze or malleable iron, and combine the three qualities of simplicity strength and absolute security.

Address

BALDWIN LOCK CO.,

TIOGA, PENN.

Wire-Drawing Machinery

complete, from Rods to No. 40 Wire, is manufactured by

S. HEALD & SON,

Send for prices, &c. Barre, Mass.

A. J. NELLIS & CO.,

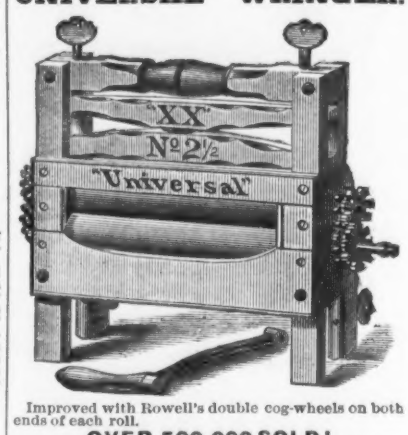
Pittsburgh.

Manufacturers of Steel or Wrought and Malleable Iron Fencings, Castings, Railings, &c., warranted free from breakages. Special attention given to orders for approved designs for Cemeteries. Also, manufacturers of Agricultural Steels of all descriptions.

Steels finished and tempered by NELLIS' PROCESS to suit any kind of soil. Special attention given to the manufacture of Nellis' Original Harpoon Horse Hay Fork Grapple and Wood Wheel Wrought Frame Horse Fork Pulleys. ☞ Medal awards on all goods of our manufacture exhibited at the Centennial. ☜

THE "OLD RELIABLE"

UNIVERSAL WRINGER.



Improved with Rowell's double cog-wheels on both ends of each roll.

OVER 500,000 SOLD!

And now in use, giving "Universal" satisfaction.
EVERY WRINGER WARRANTED.
Sold by dealers generally.

METROPOLITAN WASHING MACHINE CO.,

32 Cortlandt St., New York.

CLOTHES WRINGER!

Self-Adjusting Steel Elliptic Spring.

T. J. ALEXANDER, Manager,

BOSTON, MASS.

NORTH'S PATENT

Universal Lathe Dog.

It is very strong. Holds very strong Will not deface finished work. Holds round, square or irregular work.

Always stands up square with the work and will not "skew." Is more evenly balanced than the common dog

Send for circular.

SELDEN G. NORTH,

No. 440 North 12th Street,

PHILADELPHIA, PA.

PERRY & CO.'S STEEL PENS.

A Sample Card containing our leading styles mailed on receipt of 25 cents.

PERRY & CO., L'd, London.
112 & 114 William St., New York.

PETER GERLACH & CO.,

Manufacturers of

Warranted Extra Cast Steel

Saws and Ice Tools.

Also

Cylinder Stave Sawing, Heading & Barrel Machinery.

No. 51 Centre St., CLEVELAND, O.

MEDAL and PREMIUM

Awarded to

T. C. ALCOTT & SON,

Mount Holly, N. J.

For their *Improved*

Turbine Water Wheels.

STEARNS MFG. CO.,

ERIE, PA., Manufacturers of

Engines, Boilers and Saw Mill Machinery.

Send for illustrated circular.

"LAY ON, MACDUFF; AND DAMN'D BE HE WHO FIRST CRIES, 'HOLD, ENOUGH!'"

The **"RING"** manufacturers of Clothes Wringers having been **defeated** in their application for a preliminary injunction against us in the Western District of Pennsylvania, and being at a loss what to do next to lead the public into the belief that they own patents controlling all inventions in the line of Clothes Wringers, are out in the Oct. 25th issue of *The Iron Age* with what **THEY CALL** "A Statement of Facts." Knowing something about these things ourselves, we take the liberty to state some of the **FACTS KNOWN TO US.**

The granting of a preliminary injunction is **never** refused **in any district** when there is **no doubt of the validity of the patent** on which it is asked, and the infringement is clear. True, in some districts very little discretion is used in granting such injunctions, and the "Ring" have always selected such districts in which to bring their suits if possible.

THE ALLENDER PATENT for Wringing Machines has **NEVER been "thoroughly tested" before any court in the United States, and there never has been but one decree rendered in its support where the merits of the case CAME BEFORE THE COURT;** that was in the case of the Bailey Wringing Machine Co. *vs.* Lincoln, in the Eastern District of Mass., and although the case was poorly defended, there was but one single point lacking to have entirely invalidated the patent, and that point **WE ARE FULLY PREPARED TO SUPPLY.** In **every other case** where a decree has been rendered, the suits **never went to final trial,** but the decrees were obtained through **default, collusion or settlement.**

There are no suits commenced in the United States against F. F. Adams & Co. on the Keystone or any other Wringer made by them, except the suit in the Western District of Pa., where the "Ring" **have been defeated on the preliminary injunction,** and where we have **not a doubt they will be defeated in the final trial,** and where they will always find us ready and willing to meet them with a **full defense** against **ANY PATENT OWNED BY ANY OF THEM** on which they wish to take issue.

Such suits as they have seen fit to commence against persons who may have sold a few of our Wringers—as in the cases of Burnett Cunningham and James Patterson—they have brought simply to annoy us, and are of no consequence, as they only prevent **those parties** from **selling** the Wringers. If they have so great faith in the **validity** of their patents and their ability to sustain them, why do they not commence suits against **us at once,** in our district, as they will have to do before they can stop the manufacture of these Wringers?

We are **FULLY ABLE** and **PREPARED** to defend **ANY SUITS** they may bring against our Wringers that are of any importance, **and we guarantee every dealer who sells our Wringers against loss in their sale on account of suits.**

If the gentlemen comprising this "Ring" are not satisfied with **our** "statement of facts," we shall be pleased to enter more into detail. There are many items of interest on record, from time to time, and many things in the state of the art in this class of machines that are quite interesting, from which we could supply a chapter each week on Clothes Wringing Machines and the manipulation of patents by "Rings" for some time.

Respectfully,

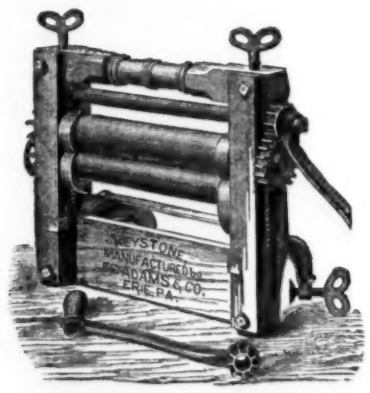
F. F. ADAMS & CO., Erie, Pa.

Keystone Wringers.

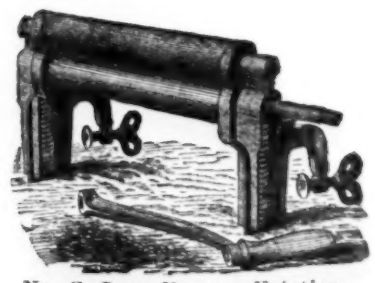
REDUCED PRICES.

No. 10, Common Gear, $57.00 per doz.

No. 1, Wood Frame, Friction, $50.00 per doz.



No. 2½, Purchase Gear, $60.00 per doz.



No. 2, Iron Frame, Friction, $48.00 per doz.

The above are the regular family sizes. They all have 1¾ by 10 inch White Rubber Rolls. Warranted equal to any other Wringers.

INDUSTRIAL ITEMS.

MAINE.

The furnaces at the Katahdin Iron Works, at Brownville, are not in operation, but large quantities of the crude ore are shipped for manufacture into paint. The ore is largely impregnated with sulphur, and has to be roasted to prepare it for smelting into iron. It is placed in kilns and subjected to fire heat for 2 days, shrinking one-quarter. It takes about 16 cords of wood to roast 100 tons of ore. It is then smelted in kilns with lime and charcoal. The works consume 12,000 cords of wood per year. The ore yields some 50 per cent. of iron.

The Edgemoggin Silver Mine, at Sedgwick, now employ 80 hands, and will continue work through the winter. There are over 1000 tons of ore ready for smelting, which shows a yield of $100 of silver to the ton and $20 of gold, with lead enough to pay for mining and smelting each ore. Smelting works of large capacity and modern improvements will be in operation soon, under the care of Prof. Harrington, of Worcester, Mass.

NEW HAMPSHIRE.

The Manchester Locomotive Works, at Manchester, recently shipped 3 locomotives to the Kansas City, St. Joseph and Council Bluffs road.

There is some rivalry among the Granite State manufacturing companies in the matter of chimneys. The one recently finished by the Nashua Iron and Steel Company, which is 100 feet high, is surpassed by one just completed at Manchester which is 125 feet high and 8 feet in diameter inside at the top. Upward of 125,000 bricks were used in its construction. It is the largest chimney in that section.

MASSACHUSETTS.

The Lincoln Iron Foundry, owned by R. B. Lincoln, at Washington Village, was burned on Friday evening, the 26th ult. Loss, $25,000; fully insured.

The Franconia Iron and Steel Company, Wareham, are driven up with business in their mills. Reports say that the company are to put on a night gang on account of the many orders they have to fill.

Among the recent shipments to Europe by the Waltham Watch Company was a lot of 200 stem-winding watches, on the order of the British government, for the use of conductors and engineers of one of the State railroads of India. This order was obtained by the London agency in competition with foreign manufacturers. Business at the Waltham factory is very active.

By the buying up of the Middleboro Shovel Company's business, the last hope of the re-establishment of the once thriving shovel business in Middleboro has disappeared, and most of the experienced shovel makers are removing to East Taunton.

CONNECTICUT.

Ground has been broken for a new rolling mill at Bridgeport. It will be 200 feet long by 140 feet wide. The principal articles of manufacture will be all kinds and sizes of copper and brass, and iron piping, steam radiators, &c., which will be made by machinery invented by Mr. Wilmot. Sheet tin in strips of 100 feet in length will also be rolled out by his new process. The building is to be erected at once, and the machinery will all be in running order before the 1st of January. An engine of 300 horse-power is being built expressly for these works, and it is calculated that several hundred hands will be employed.

A large quantity of the metal for cartridge shells for the Turks and Russians is made at Wolcottville, and the brass mill there is running night and day, making the general business of the town very good. The amount of war material which is being manufactured in this country for the European combatants is prodigious. On Tuesday, the steamer J. B. Walker sailed from New Haven for Constantinople with nearly $2,000,000 worth of munition and ammunition for the Turks.

The Hartford Foundry and Machine Company are building a 20 by 45 inch Woodruff & Beach engine for a paper mill in Dalton, Mass. The fly-wheel is 16 feet diameter, with 32-inch face, and weighs 13 tons. They are just finishing for P. Adams' paper mill, Buckland, a lot of 5-inch and 5½-inch shafting, the pulleys being turned, inside and outside, and balanced.

The Pratt & Whitney Co., Hartford, are doing a good business in their manufacture of taps and dies under the Grant patent and their improvements. They manufacture, for hand and machine work, both the United States standard and the Whiteworth (England) standard, and lately they have received orders of considerable extent for the Whiteworth standard, a Georgia railroad company ordering a complete set for all their shops. The dies and taps made by the Pratt & Whitney Company are so constructed that they cut, at one operation, the rounded Whiteworth thread just as well as the common V thread or the abased V thread of the United States standard. The company is building, for S. W. Green, Jacob street, New York, a double set of type setting and type distributing machines, 12 of each.

The Branford Lock Works, Branford, report exceptionally busy times. They inform us that the number of hands now employed is 250, being an increase of 40 since last July. In the works their daily average production is 350 dozen locks, and an equal number of knobs. They have recently added to their assortment a line of bronze goods, including locks, knobs, escutcheons, &c., and it is intended to still further increase their line by the addition, next January, of a complete assortment of lock trimmings and kindred goods in Berlin bronze. As an evidence of the growth of their business, they state that they have added 200 names to their list of customers since last June, and have recently received an order from a Western house for 2600 dozen locks and 1800 dozen knobs. They are six weeks behind their orders, and are running the works 13 hours per day. Next January the company will issue a revised edition of their illustrated catalogue, showing, in addition to the goods presented in their 1876 catalogue, the large variety that has since been added. The company carry a stock of goods at their warehouse, No. 107 Chambers street, New York, and have established agencies in Boston, Baltimore, San Francisco and Philadelphia. Mr. Thomas Kennedy is president of the company.

NEW YORK.

The Niagara Bridge Works, at Buffalo, have just completed a riveted lattice bridge, 450 feet long and 150 feet high, over Watkins Glen, on the Syracuse, Geneva and Corning road.

The Rome rail mill reports a good deal of inquiry for iron rails.

The Brooks Locomotive Works, at Dunkirk, have sold four freight engines to the Chicago, Milwaukee and St. Paul road, and have an order in hand for locomotives for the New York Elevated Railroad.

NEW JERSEY.

Peter Oberg & Co., of Paterson, have leased the forge at Bloomingdale, which has been idle for the past three years, and are manufacturing coal-blast charcoal scrap blooms.

The Cumberland Iron Works, at Bridgeton, have more work on hand now than at any time for several years past. The pipe mill is running night and day on orders from California for gas pipe.

The Mercer Rubber Company, at Trenton, have just completed an order from one of the largest steel spring manufacturers in the country for over 5000 pounds of rubber car springs. The springs are for use on a large order for cars now being filled by a Western car builder.

PENNSYLVANIA.

The Warwick Furnace Company, of Pottstown, have instructed Mr. P. L. Weimer, of the Weimer Machine Works, Lebanon, to prepare the plans for the rebuilding of their furnace and to put it in running order as soon as possible. Warwick Furnace has been very unfortunate from some cause or other, having chilled up three times in succession after a few weeks' blast.

The I. P. Morris Iron Company has brought suit against the stockholders of the Keely Motor Company, in Philadelphia, for a claim for material furnished.

The Reading Stove Works of Orr, Painter & Co. are very busy, doing an extensive home trade as well as sending their manufactured goods to various parts of the South and West. The establishment is one of the most prosperous in Eastern Pennsylvania.

The No. 2 Furnace of the Pennsylvania Iron Works went into blast on the 12th ult.

The mill owned by the Philadelphia Coal and Iron Company, at Reading, is running 5 days per week, employing about 300 men. The mill consists of 12 single puddling furnaces with a yearly capacity of 6500 tons of puddled bars, 8 heating furnaces and 2 reheating furnaces, capable of furnishing 20,000 gross tons of finished rails annually. The first rail made by this mill was in March, 1868, and all the rails manufactured in 1873, '74 and '75 have not been laid on the track. This generally would seem to show the uniform excellence and durability of the rails turned out by their process. On the whole, two-thirds old rails and one-third puddled iron is used in the manufacture of these rails.

Martha Furnace, at Huntingdon, will go into blast about November 1st.

Owing to a pressure of orders, the nail feeders of the Etna Iron Works, New Castle, are compelled to work from 6 o'clock in the morning till 9 o'clock at night. The iron business in New Castle is said to be better now than it has been for the past three or four years.

The Sharon *Herald* says: At the New Mill, everything is on double turn. Keel Ridge Furnace is still doing well. At the Westerman Works, same as last week, only the nail factory and sheet mill are on. The blast furnaces are both doing well as usual. The bloom mill at the Stewart Iron Works went into operation on Monday of last week, the 22d ult. There were only two furnaces lighted up, as they were unwilling to risk more until the hammer and "telegraph" were tested by actual work. There were three heats hammered out, which appeared to satisfy those concerned in the matter of the machinery. The telegraph works a trifle rusty, but the operators say "she'll work all right with a bit of grease." The other six furnaces were lighted on Monday night, the 22d ult. Blast furnace No. 2 is working away as usual. Lining brick for No. 1 are on the ground. They are made by Harbison & Walker. They are a new brick in this neighborhood, and appear a little soft, but when broken show good in the inside.

Messrs. Knauer & Moritt, who formerly had a forge at Knauertown, Chester county, have purchased a tract of land a short distance below Douglassville Station, adjoining the Reading Railroad, on the farm of Richard T. Leaf, and on Monday the 22d ult. broke ground for the erection of a new forge which will have eight fires.

A funace belonging to Hon. G. Dawson Coleman, Lebanon county, produced 41 tons of pig iron in 24 hours.

The Chester Rolling Mill is running double turn and employing about 150 hands.

The Philadelphia and Erie shops at Renovo, are full of work. Besides the usual repair work there are 10 of the Pennsylvania engines damaged in the Pittsburgh fire at the shops to be rebuilt.

The Lehigh Valley Railroad is to be laid with steel rails over its entire length.

The Maidencreek Iron Company are enlarging the rolling mill at Blandon by putting in an additional 30 feet attachment. A new engine and set of rollers have also been put in, and the rolling mill will start in operation in a few days.

The iron ore mines of the Warwick Iron Company, near Boyertown, have ceased operations for 5 weeks, during which time, however, the pumps will be kept going.

PITTSBURGH AND VICINITY.

The iron mill of Lewis, Oliver & Phillips, in the 29th ward, began running double turn Monday, the 22d ult., thus giving employment to an additional number of hands. The firm are having a pier constructed in the river opposite their works, with a view to facilitating the unloading of iron ore from boats.

The American Iron Works, Jones & Laughlin's, in the 24th ward, still continue in full operation, employing over 2000 hands. The firm has decided to build an addition, 80 feet in extent, to the polishing mill, and work upon it has been commenced.

Painter's rolling mill has been running double turn uninterruptedly since the 8th of July last, with the exception of 1 week during the riot excitement. About 600 hands are employed, and the mill has a capacity for turning out 100 tons of iron every 24 hours. The specialty is hoop iron.

The Pittsburgh Locomotive Works recently completed 2 heavy freight engines for the Indianapolis, Peru and Chicago road.

Porter, Bell & Co. recently shipped 2 narrow-gauge engines to the Colorado Central Road, and have others under way for lines in Ohio and Texas.

The Pittsburgh Locomotive and Car Works are making 3 oil well boilers per week.

Messrs. Hubbard, Bakewell & Co., the saw and shovel manufacturers, are running a portion of their works at night.

Messrs. Morris & Marshall's foundry seems to have an abundance of orders for blast furnace, house front and other heavy castings.

A prominent steel works in this city has just filled an order for a car load of tool steel, to be shipped by express. The charges were about $1400 on it.

Mr. John Roney, the iron founder, states that for the past 6 weeks his establishment has had an abundance of orders, and, of course, is running full.

A large iron firm in the 12th ward state that they have just received an order for the iron from which to build a bridge at prices that will net them a fair profit. This firm for the past two years have only taken such orders as they could clear themselves on, preferring loss of trade to a loss of money on each item.

VERMONT.

In August last the Fairbanks Scale Works at St. Johnsbury shipped 50 car loads of scales.

WEST VIRGINIA.

The Bellaire Nail Works, Wheeling, stock sold on Thursday, the 25th ult., by Hervey & Britt, brought $92 per share. Ten shares were disposed of.

NORTH CAROLINA.

North Carolina claims to have 81 gold mines.

OHIO.

James' Rolling Mill and one of the scrap hammers of the forge, at Cuyahoga Falls, have been leased by Mr. S. Matherson, who will hereafter operate them.

The Hubbard Rolling Mill has been repaired, and in about three weeks will commence running again. An agent is out on the road now soliciting orders.

Not long since the Cleveland Rolling Mill Company turned out at their new rod mill, in nine working hours, 51,030 pounds of No. 4 steel wire rods.

The Cleveland White Lead Works of J. H. Morley & Co. now employ about 50 hands, and have all the work they can do. Their shipments are principally to New York, Pennsylvania, Michigan, Indiana and throughout this State.

Messrs. R. T. Coombs and E. C. Adams, proprietors of the Forest City Plating Works, No. 22 Canal street, are now doing some fine work in gold, silver, nickel and copper plating. They make a specialty of head-light reflectors and car work. Their business is much better this season than last.

The old James Ward Rolling Mill and Furnace, at Niles, was sold at assignee's sale on Monday, the 24th ult. The former was bid off by P. M. Hitchcock, of Cleveland, for $10,000; the furnace by A. M. Robbins, of Niles, for $4500.

At Ironton, the Belfont Mill is idle now; will probably not continue so long. The Lawrence Mill is in the full tide of operation. Lambert & Gordon are employed principally on the machinery for Sarah Furnace; have about two months' work yet on it. The Belfont Furnace is still on the move and running satisfactorily. The quietness about the Iron and Steel furnace and mill is profound, and will know no waking for some time to come.—Ironton *Register*.

The Columbus Bridge Works of D. H. & C. C. Morrison, at Dayton, have been in successful operation for upward of 40 years.

The Clinton Furnace property, has been sold to Wm. Kinney for $15,000.

The Gaylord Rolling Mill Company, Cincinnati, claim to have a process of their own for making steel which is superior to the Siemens-Martin or Bessemer. Mr. Coleman, late of Louisville, Ky., has succeeded to the management of this mill, vice Mr. Green.

The Peerless Wringer Company, at Cincinnati, have made very large sales of their wringers this year, and are now running their works full 9 hours per day on orders.

The Straub Mill Company, at Cincinnati, are running their works full 9 hours, and are quite busy, with prospect of a fair business during the coming winter. Their sales have been large in the Southern States this year. The Straub Mill combines great strength with compactness and durability. It is receiving much favor in the South and West.

ILLINOIS.

All the zinc works of LaSalle and Peru are now again in full blast, and it is expected that the LaSalle and Peru coal mines will soon follow the example of the Kenosha mine in resuming work at 80 cents per ton and rough-and-tumble weight.

The Monmouth Iron and Nail Company have received license to organize with a capital of $500,000, at Monmouth.

The 80 short-shift furnacemen who quit work at the Matthiessen & Hegler zinc works, in LaSalle, because of a reduction of their wages from $1.75 to $1.50 per day, all resumed work on the 20th ult. at the last-named wages.

KENTUCKY.

The Mount Savage Furnace is out of blast, and men are at work on the new hearth and a change of tuyere arrangement, it having been decided to change from one to two tuyeres. This work and the putting up of a cold-blast smoke-stack will take two more weeks, when the furnace will again resume blowing. With 300 loads of charcoal on hand and 350 more to come in, this blast will last till the middle of February. Of ore there are 2000 tons of choicest quality on hand, and additional supplies are coming in at the rate of 20 tons a day, for which $2.25 per ton is paid in store goods.

The great Gaylord Furnace at Newport, which is said to have cost seven years ago $150,000 to build, is being torn down.

The repairs at Swift's rolling mill are nearly completed, and work will be resumed in a few days.

IOWA.

The Clinton Bridge Company have orders for several Howe truss bridges for the Chicago, Dubuque and Minnesota road.

MICHIGAN.

No. 1 stack of the Pioneer Furnace, destroyed by fire a little over three or four months ago, was blown in on the 16th ult., and made its first cast the morning following. The massive machinery has worked like a charm since being put in operation.

Detroit is shipping pig iron to Harrisburg, Pa., for special purposes.

The Eureka Iron Company's furnace, at Wyandotte, will blow out about the middle of December.

The silver smelting works, at Wyandotte, under their new manager, Mr. Thomas McFarlan, are said to be doing excellently.

The Humboldt Iron Company are about building a side track from the new shaft-house connecting with the Republic branch, near the Edwards mine store.

The following shows the total shipments of ore to October 16 from the district for the season, together with those of a corresponding period last year:

From where.	1876.	1877.
From Marquette	413,179	491,554
From Escanaba	315,139	324,706
From L'Anse	75,555	54,422
Total	803,873	870,682

Showing an increase of 66,809 gross tons. *Mining Journal.*

Southern Trade.

The Philadelphia *North American* says: The remarkable revival of the Southern trade this season has not been sufficiently commented upon by the journals of the Northern commercial cities. Of the fact itself there can be no doubt. Whatever the causes may have been, the recovery has been general and surprising. It was looked for last spring, but failed to make its appearance on account of the political agitation and uncertainty. But with the lapse of time and the harmonizing of the jarring sections, commercial confidence seemed to spread and to acquire strength. Surprise has frequently been felt and expressed in former years, that this restoration of Southern trade had not followed the resumption of Southern crops, mining and manufactures. It was said, however, that the deficiency was among the Southern merchants and tradesmen, who regarded the situation with nervous apprehension, and therefore made no effort in the way of business enterprise.

Owing to this cause, the usual exertions of the British manufacturers and merchants, after the civil war, to take advantage of the intense animosity between North and South to monopolize the trade of the latter, utterly failed of success. To the same cause may be traced the embarrassments of Southern railways, and the failures of some important Southern industries. Since the settlement of the Southern question was made by the Hayes administration, the absence of all public agitation has been followed by a revival of business at the South, and the result is seen in the large amount of sales to that section by the Northern commercial cities during what is usually termed the fall trade. The trade of that section was always large and valuable before the war, and perhaps the proportion of losses sustained in it was not larger on the average than those formerly incurred in the Western trade. In the prosperous times of that traffic, many of the largest Northern jobbing houses in New York and Philadelphia made it their chief aim. Two classes of goods were in great demand at the South—the costliest and the cheapest. But since the war, the demand for the former has been very small. Now it seems to be setting in again, and this it is which gives the Southern trade its peculiar value. There has been a growing belief among shrewd Northern observers, that there must be much more money at the South than the country wore the appearance of having. This was based on the profits of the crops since the war and the extreme closeness and economy practiced by the Southern planters and well-to-do classes. And the remarkable activity of the Southern trade this season appears to sustain the view. It is manifest that since the war millions of dollars have gone South to move the crops, and have remained there and not returned to us again.

Most of the Southern cities and towns are now much larger, more populous and more flourishing than they were; and though the invariable report from all of them since the war has been one of poverty and want of means, there has this season been a mysterious change. Money has come out of its hiding places. Trade has loomed large where little was expected, and things generally are rapidly assuming the old aspect. It is true that the ruin wrought by the total destruction of all the wealth invested in the Confederate cause left a fearful waste at the South. But a wholesome period of hard work, stringent economy and close management has done wonders, and it is no exaggeration to say that the average condition of the Southern people is very much improved over what it was in 1860. This will be rendered more apparent hereafter by the progress of trade.

The Composition of the Sun.—A discovery of importance to science is announced by Dr. Henry Draper, of Hastings-on-the-Hudson. It is well known to students of the spectroscope that while the black lines that indicate the presence of metallic vapors are so abundant in the solar spectrum as to leave no room for doubting that most, if not all the metals are ignited in the sun, there is yet an absence of the lines that characterize nearly all the non-metallic substances. Hydrogen is excepted from this sweeping rule, but there are many reasons for classing that gas with the metals. Various theories have been put forward to explain the absence of non-metallic lines from the solar spectrum, and the fact has even been used to throw a doubt over the nebular hypothesis, which necessarily assumes that the constituents of the sun cannot greatly differ from those of the earth. Dr. Draper's discovery, if it be confirmed, shows that at least one—and probably several—non-metallic substances are present in the sun. In a paper read before the American Philosophical Society last month, he gave the details of experiments which appear to prove that oxygen forms one of the sun's constituents. Its presence is indicated in the spectrum, not by black but by bright lines. To make this more apparent, Dr. Draper has photographed with the spectrum of the sun a "comparison spectrum" of common air, the air being ignited by the electric sparks of a Leyden jar. The "comparison spectrum" gives the bright lines of oxygen and nitrogen, and also (from the terminals of the battery used) those of aluminum and iron. The lines of the metals serve to check the accuracy with which the two spectra—of the sun and of air—are matched.

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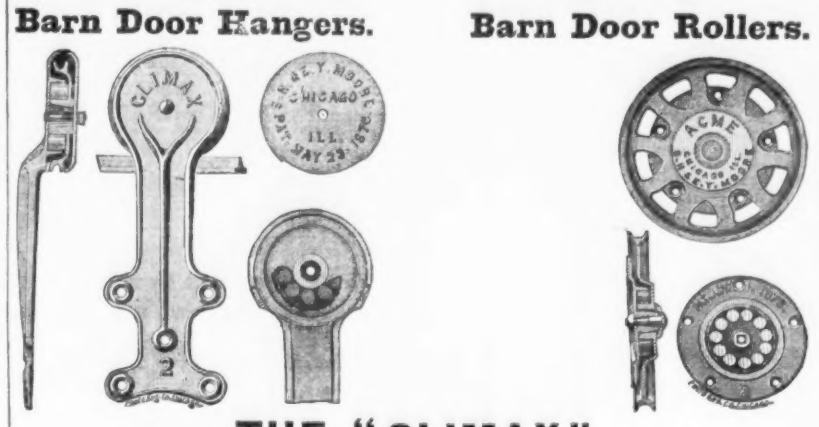

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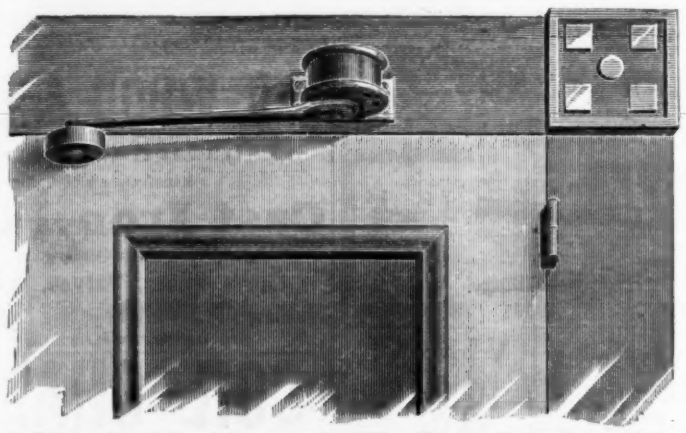

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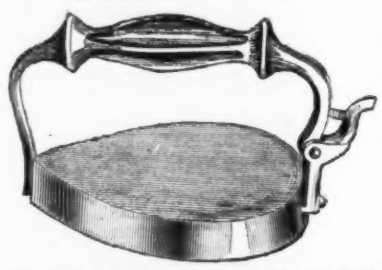

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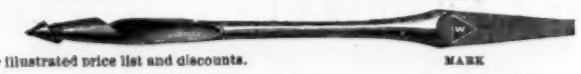

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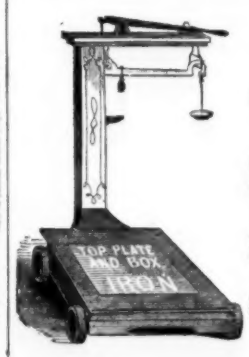

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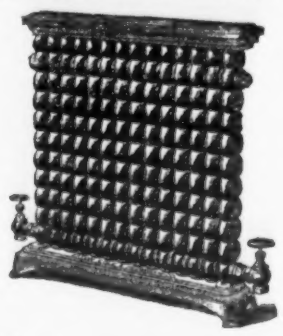

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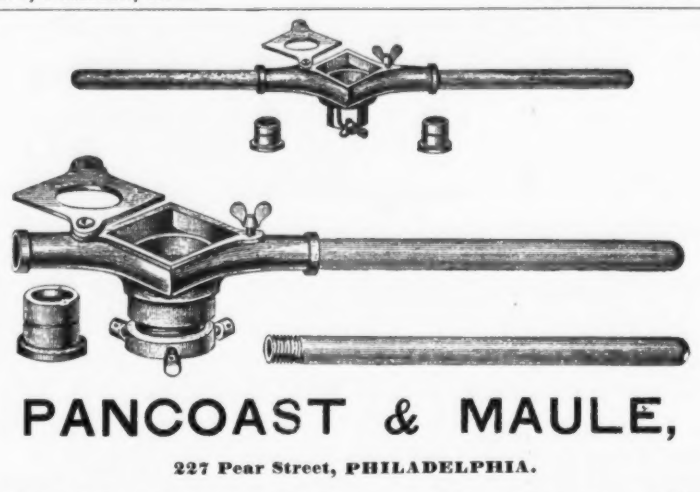

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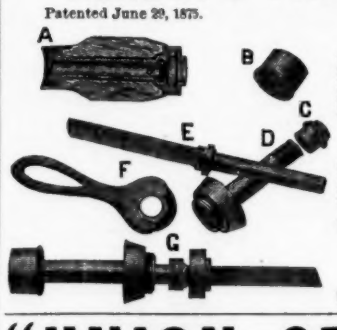

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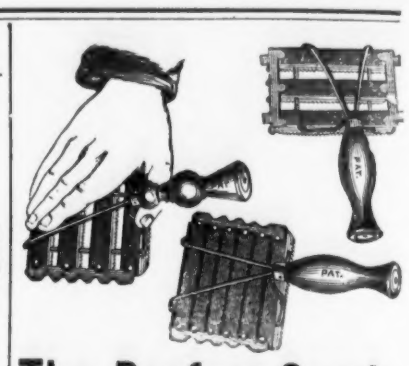

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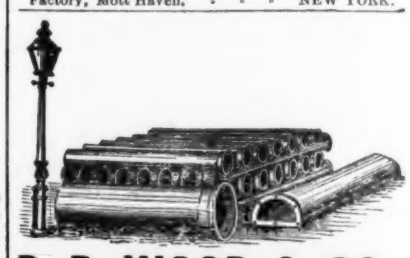

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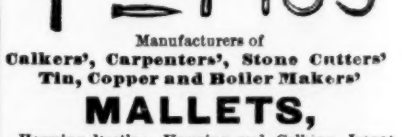

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Spring Perch Co., Bridgeport, Conn. ... 25
Hotchkiss Guy C., Field & Co., Brooklyn, E. D. ... 9
The Ætna Spring and Axle Co., Bridgeport, Conn. ... 12

Bed Screws. *Maker of.*
Shelton Co., Birmingham, Conn. ... 44

Bellows. *Manufacturers of.*
Newcomb Bro's., 586 Water, N. Y. ... 29
Scott Geo. M., Chicago, Ill. ... 29

Bells (Sleigh.)
Bevin Bros. Mfg. Co., Easthampton, Conn. ... 13

Belting, Leather. *Makers of.*
Alexander Bros., 412 N. 3d., Phila. ... 39
Arny Charles W., 148 N. 3d, Phila. ... 39
Forepaugh Wm. F., Jr., & Bros., Phila. ... 39

Bird Cages. *Makers of.*
Lindeman O. & Co., 254 Pearl, N. Y. ... 3
Maxheimer John, 249 Pearl, N. Y. ... 13
Osborn Mfg. Co. 49 Bleecker, N. Y. ... 13

Bit Braces. *Manufacturers of.*
Miller's Falls Mfg. Co., 74 Chambers, N. Y. ... 25

Black Lead.
McIlvaine Bros., Philadelphia, Pa. ... 30

Blocks, Tackle. *Makers of.*
Burr & Co., 31 Peck Slip N. Y. ... 30
Penfield Block Works, Lockport, N. Y. ... 13
Thompson Joseph, 38 Burling Slip, N. Y. ... 8

Blooms.
Oberg Peter & Co., Paterson, N. J. ... 26

Blowers. *Makers of.*
Keystone Portable Forge Co., Philadelphia ... 40

Boiler Tubes.
National Tube Works Co., Boston, Mass. ... 30

Bolts (Screw.)
Eagle Bolt Works, Philadelphia, Pa. ... 12
Gilmor Wm. of Wm., Baltimore, Md. ... 12

Books.
Lamberson Buell, 97 Chambers, N. Y. ... 20

Borax.
Pope Thomas J. & Bro., 292 Pearl, N. Y. ... 4

Bracket Saws.
Shipman & Binder, Rochester, N. Y.

Brass Butts. *Makers of*
Tiebout W. J., 210 Pearl, N. Y. ... 26

Brass. *Manufacturers of.*
Ansonia Brass and Copper Co., 19 Cliff, N. Y. ... 2
Brass Goods Mfg. Co., 280 Pearl, N. Y. ... 2
Davol John & Sons, 100 John, N. Y. ... 2
Holmes, Booth & Haydens, 49 Chambers, N. Y. ... 2
Manhattan Brass Co., 83 Reade, N. Y. ... 2
Miller Edw. & Co., 4 Warren, N. Y. ... 2
Plume & Atwood Mfg. Co., 80 Chambers, N. Y. ... 2
Scovill Mfg. Co., 421 Broome, N. Y. ... 2
The Wilmot Mfg. Co., 50 Barclay, N. Y. and 96 John, Bridgeport, Conn. ... 2
Waterbury Brass Co. 52 Beekman N. Y. ... 2

Brick Presses. *Makers of*
Carnell F. L. & D. R., 1844 Germantown Ave., Phila. ... 9

Bridge Builders.
Moseley Iron Bridge and Roof Co., 5 Dey, N. Y. ... 5

Burglar Alarms.
United Burglar Alarm Co., Philadelphia, Pa. ... 12

Butcher and Shoe Knives. *Manufacturers of.*
Wilson John, Sheffield, England ... 37

Butts and Hinges.
American Spiral Spring Butt Co. 82 Beekman, N. Y. ... 44
Sabin Mfg. Co., Montpelier, Vt. ... 29
Semple & Birge Mfg. Co., St. Louis, Mo. ... 6
Union Mfg. Co., 98 Chambers, N. Y. ... 7

Carriage Bolts. *Makers of.*
Townsend, Wilson & Hubbard, Phila. ... 12

Carriage Hardware. *Makers of.*
Smith H. D. & Co., Plantsville Ct. ... 13

Carriage Springs.
Reock John H. & Co., Newark, N. J. ... 2

Car Axles.
Roberts A. & P. & Co., 265 S. 4th, Philadelphia ... 5

Car Wheels, etc., *Manufacturers of.*
Taylor Iron Works, High Bridge, N. J. ... 6

Chisels. *Manufacturers of.*
Buck Bros., Millbury, Mass. ... 13

Coal. *Miners of.*
Lehigh Valley Coal Co., cor Courtlandt and Church, N. Y. ... 37
Pardee A. & Co. 111 Broadway, N. Y. ... 37
The Hoboken Coal Co., Jersey City, N. J. ... 37

Coal and Coke Washing Machines.
Diescher S., Pittsburgh, Pa. ... 5

Coal Vases.
Sidney Shepard & Co., Buffalo, N. Y. ... 25

Coal Hods, *Manufacturers of.*
Easterbrook Wm., 811 Cherry, Phila. ... 35
Heinz, Pierce & Munschauer, Buffalo, N. Y.

Coffee and Spice Mills.
Lane Brothers, Millbrook, N. Y. ... 6
Enterprise Mfg. Co., Philadelphia, Pa. ... 33

Coil Chain.
Union Chain and Cable Co., Pittsburgh, Pa. ... 30

Commission Merchants.
Irvine A. A., 14 Murray, N. Y. ... 31

Compasses and Dividers, *Manufacturers of.*
Bemis & Call Hardw. & Tool Co., Springfield, Mass. ... 26

Cooper's Tools, etc., *Dealers in.*
D. R. Barton Tool Co., Rochester, N. Y. ... 13
Little Chas. E. 59 Fulton N. Y. ... 8

Copper.
Pope, Cole & Co., Baltimore, Md. ... 2
The New Haven Copper Co., 255 Pearl, N. Y. ... 2

Corn Huskers.
Chambers, Bering & Quinlan, Decatur, Ill. ... 38

Corn Shellers.
Rumsey & Co., Seneca Falls, N. Y. ... 37

Corrugated Iron.
Moseley Iron Bridge and Roof Co., 5 Dey, N. Y. ... 5

Croquet.
R. Bliss Mfg. Co., Pawtucket, R. I. ... 31

Crucibles. *Manufacturers of.*
Wile, Si del & Co., 709 Market, Phila. ... 41

Curry Combs. *Manufacturers of.*
Cassell I. N., Fredericktown, O. ... 28
Hazleton D. W. & Co., 724 Girard Ave., Phila. ... 28
Hotchkiss' Sons, Bridgeport, Conn. ... 6
Lawrence Curry Comb Co., 38½ 2d Avenue, N. Y. ... 20

Cutlery, *Importers of.*
Boker Hermann & Co., 101 Duane, N. Y. ... 37
Clatworthy F. & W., 82 Chambers, N. Y. ... 11
Fisher Jos. S., 411 Commerce, Phila. ... 11
Friedmann & Lauterjung, 14 Warren, N. Y. ... 11
King, Briggs & Co., 596 Broadway, N. Y. ... 11

Cutlery. *Manufacturers of.*
American Shear Co., Hotchkissville, Conn. ... 11
Burkinshaw Aaron, Pepperell, Mass. ... 11
Burkinshaw W. C., 26 Cliff, N. Y. ... 36
Goodell & Co., Antrim, N. H. ... 9
John Russell Cutlery Co., 97 Chambers, N. Y. ... 42
Meriden Cutlery Co., 49 Chambers, N. Y. ... 11
Miller Bros. Cutlery Co., W. Meriden, Conn. ... 12
Naugatuck Cutlery Co., 89 Chambers, N. Y. ... 11
New York Knife Co., Walden, N. Y. ... 11
The Frary Cutlery Co., Bridgeport, Conn. ... 11
The Lamson & Goodnow Mfg. Co. 88 Chambers, N. Y. ... 11
The Rogers Cutlery Co., Hartford, Conn. ... 11

Door and Gate Springs.
Dunne P. R., 182 Fulton, N. Y. ... 37
Quackenbush, Townsend & Co., 59 Reade, N. Y. ... 38
Van Wagoner & Williams, 82 Beekman, N. Y. ... 44

Door Hangers. (Anti-friction)
Moore S. H. & E. Y., Chicago, Ill. ... 29

Dredging, *and Makers of Dredging Machines.*
Am. Dredging Co., 10 S. Delaware ave., Phila. ... 43

Drill Chucks. *Manufacturers of.*
Cushman A. F., Hartford, Conn.
Lambertville Iron Works, Lambertville, N. J. ... 31

Drilling Machines. *Makers of.*
Bickford H., Cincinnati, O. ... 44
Silver & Deming Mfg. Co., Salem, O. ... 8
Thorne, DeHaven, & Co., Philadelphia ... 43

Drop Forgings.
Boker Hermann & Co., 101 and 103 Duane, N. Y. ... 21
Hull & Belden Co., Danbury, Conn. ... 9

Edge Tools. *Makers of.*
The D. R. Barton Tool Co., Rochester, N. Y. ... 13
Doscher M., 4 and 6 Gold, N. Y. ... 29

Elevating and Conveying Machines.
Fitzhugh J. R., 4228 Market, Phila. ... 6

Elevators. *Makers of.*
Crane Bros. Mfg. Co., Chicago, Ill. ... 9
Lane & Bodley Co., Cincinnati, O. ... 43

Elevator Buckets.
The Rivet Bucket Co., 51 Franklin, Chicago, Ill. ... 5

Engineers, Machinists, etc.
Henshall James, 1066 Beach, Phila. ... 42
Moore James, cor. 16th and Buttonwood, Phila. ... 43

Engines, Steam. *Makers of.*
Elvien Chas. W. & Co., Kensington, Phila.
Fales Thomas J., 18 Park Place, N. Y.
Fitchburg Steam Engine Co., Fitchburg, Mass. ... 43
Hartford Foundry and Machine Co., Hartford, Ct. ... 43

Lovegrove & Co., 125 South 4th, Phila. ... 40
Payne B. W. & Sons, Corning, N. Y. ... 12
Shapley & Wells, Binghamton, N. Y. ... 43
Snyder Ward B., 94 Fulton, N. Y. ... 40
Taylor Mfg. Co., Westminster, Md. ... 42

Engravers.
Collins Geo. B., 83 Reade, N. Y. ... 44
Strobel & Weisbrodt, Cincinnati, O. ... 28

Faucets, Brass. *Makers of.*
McNab & Harlin Mfg. Co., 56 John, N. Y. ... 30

Faucets, *Self-Measuring. Makers of.*
Enterprise Mfg. Co., of Pa., Phila. and N. Y. ... 33

Feed Cutters.
Silver & Deming Mfg. Co., Salem, O. ... 8

Files, *Importers of.*
Carr J. & Riley 82 John, N. Y. ... 36
Fisher Joseph S., 411 Commerce, Phila. ... 11
Frasse Peter A. & Co. 95 Fulton, N. Y. ... 8
Moss F. W., 80 John, N. Y. ... 36
Sanderson Bros. & Co., 16 Cliff, N. Y. ... 36

Files, *Manufacturers of.*
American File Co., Pawtucket, R. I. ... 8
Auburn File Works, 89 Chambers, N. Y. ... 8
Barnett G. & H., 41 and 43 Richmond, Phila. ... 8
Disston Henry & Sons, Phila.
Draper C. T. & Co., Sing Sing, N. Y. ... 8
Everhart James M., Scranton, Pa. ... 44
Heller & Bros., Newark, N. J. ... 8
Johnson & Bro., 1 Commercial, Newark, N. J. ... 8
McCaffrey & Bro., 1732 and 1734 N. 4th, Phila. ... 8
Nicholson File Co., Providence, R. I. ... 32
Paul Chas. B., Williamsburgh, N. Y. ... 8

Fire Brick, *Makers of.*
Brooklyn Clay Retort and Fire Brick Works, Van Dyke, St., Brooklyn, N. Y. ... 26
Evens & Howard, St. Louis, Mo. ... 26
Gardner, Stuart & Co., Pittsburgh ... 26
Hall A. & Sons, Perth Amboy, N. J. ... 26
Hall & Sons, Buffalo, N. Y. ... 26
Maurer Henry, 418 East 23d, N. Y. ... 29
Kreischer B. & Son, 58 Goerck, N. Y. ... 26
Newton & Co., Albany, N. Y. ... 26
Ostrander James & Son, Troy, N. Y. ... 26
Valentine M. D. & Bro., Woodbridge, N. J. ... 26
Watson John R., Perth Amboy, N. J. ... 26
Weber Adam, 633 E. 15th, N. Y. ... 23

Fire Escapes.
Falk L., 165th, N. Y. ... 4

Flint and Emery Paper and Cloth.
Baeder, Adamson & Co. 730 Market, Phila. ... 8

Flour Sieves.
Ketcham E. & Co., 100 Beekman, N. Y.

Flower Pot Stands.
Barnum E. T., Detroit, Mich. ... 2

Fluting Machines.
The American Machine Co., Philadelphia ... 25
Weeks A. A., 82 John, N. Y. ... 29

Forges, Portable, etc.
Keystone Portable Forge Co., Philadelphia ... 40

Founders and Machinists.
Saml. J. Cresswell Jr., 812 Race, Phila., Pa. ... 6

Foundry Facings.
Paxson J. W. & Co., 514 Beach, Phila.
Whitehead Bros., 517 W. 15th, N. Y. ... 4

Friction Mats.
Colt J. B. & Co., 297 Broadway, N. Y. ... 11

Furnaces. *Makers of*
Richmond & Potts, 119 S. Fourth, Phila., Pa. ... 5

Galvanized Iron.
Lefferts Marshall Jr., 90 Beekman, N. Y. ... 4

Governors.
Junius Judson & Son, Rochester, N. Y. ... 42

Grindstones.
Wood Walter R., 283 and 285 Front, N. Y. ... 37
Worthington & Sons, North Amherst, O. ... 37

Guns, &c.
Windmuller Louis & Roelker, 20 Reade N. Y. ... 20

Gunpowder. *Makers of.*
Kneeland F. L. (Dupont) 70 Wall, N. Y. ... 36
Laflin & Rand Powder Co. 26 Murray, N. Y. ... 36

Hardware Commission Merchants.
Biglin Philip S., 110 Chambers, N. Y. ... 6
Cook Samuel G. B. & Co., Baltimore, Md. ... 37
Graham & Haines, 113 Chambers, N. Y. ... 38
Heaton & Denckla, Philadelphia, Pa. ... 41
Walbridge G. B. & Co., 83 Reade, N. Y. ... 35

Hardware Dealers.
Brower John I. & Son, 288 Greenwich, N. Y. ... 9
Lloyd, Supplee & Walton, 625 Market, Phila. ... 38
Prouty Hardware & Mfg. Co., 59 Beekman, N. Y. ... 32
Quackenbush, Townsend & Co., 59 Reade, N. Y. ... 38
Shepard Sidney & Co., Buffalo N. Y. ... 35
Wilson J. Clark & Co., 81 Beekman, N. Y. ... 32

Hardware Importers.
Boker Hermann & Co., 101 Duane, N. Y. ... 37
King, Briggs & Co., 596 Broadway, N. Y. ... 11
Van Wart, Son & Co., 134 and 136 Duane, N. Y. ... 11
Harrold F. W., 78 Chambers, N. Y. ... 11
Windmuller Louis & Roelker 20 Reade N. Y. ... 20

Hardware Manufacturers.
American Spiral Spring Butt Co., 82 Beekman, N. Y. ... 44
Clark & Co. Buffalo, N. Y. ... 38
Corbin P. & F., New Britain, Conn. ... 16 & 17
Cowles Hardware Co., Unionville, Ct. ... 8
Enterprise Mfg. Co., Phila. ... 33
Miller's Falls Mfg. Co., 74 Chambers, N. Y. ... 25
Parr Geo., Buffalo, N. Y. ... 32
Peck G. Webster, 110 Chambers, N. Y. ... 8
Perin & Gaff Mfg. Co., Cincinnati, O. ... 37
Pratt & Co., Buffalo, N. Y. ... 35
Providence Tool Co., Providence, R. I. ... 13
Russell & Erwin Mfg. Co., New York ... 10
Stanley Works, New Britain, Conn. ... 28
Union Mfg. Co. 99 Chambers, N. Y. ... 7
Van Wagoner & Williams 82 Beekman, N. Y. ... 44
Wilson Mfg. Co., New London, Conn. ... 6

Hardware Specialties.
Grant & Co., Newark, N. J. ... 38
Jessup & Sterling, 7 and 9 Cliff, N. Y. ... 4
Perin & Gaff Mfg. Co., Cincinnati, O. ... 6
Semple & Birge Mfg. Co., St. Louis, Mo. ... 6
Shepard Sidney & Co., Buffalo, N. Y. ... 35
Spencer & Underhill, 94 Chambers, N. Y. ... 36

Hay Knives.
Holt Hiram & Co., East Wilton, Me. ... 38

Hinges.
Lewis, Oliver & Phillips, Pittsburgh, Pa. ... 13

Hog Ringers
Chambers, Bering & Quinlan, Decatur, Ill. ... 38

Hoisting Engines. *Makers of.*
Crane Bros. Mfg. Co., Chicago, Ill. ... 9
Mundy J. S., Newark, N. J. ... 42

Horse Clippers.
Shannon J. Jacob, Philadelphia, Pa. ... 41

Horse Nails, *Makers of*
Ausable Horse Nail Co. 35 Chambers, N. Y. ... 19
Globe Nail Co., Boston, Mass. ... 6
National Horse Nail Co., Vergennes, Vt. ... 25
Northwestern Horse Nail Co., Chicago, Ill. ... 6
Pratt & Co., Buffalo, N. Y. ... 35
Putnam S. S. & Co., Neponset, Mass. ... 8

Horse Shoes, *Makers of.*
Boston Rolling Mills, 17 Batterymarch, Boston ... 4
Burden Iron Works, Troy, N. Y. ... 4
Rhode Island Horse Shoe Co., Providence, R. I. ... 6
Schoenberger & Co., Pittsburgh, Pa. ... 4

Hydrants, &c.
McLean John, 300 Monroe, N. Y. ... 40

Hydraulic Jacks.
Dudgeon Richard, 24 Columbia, N. Y. ... 43
Lyon E. & Co., 470 Grand, N. Y. ... 43

Insurance, Boiler.
Hartford Steam Boiler Inspection and Insurance Co. ... 43

Iron Brokers.
Boynton Geo. A., 70 Wall, N. Y. ... 4
Crane U. O., 104 John, N. Y. ... 4
Hatry A. G., Pittsburgh, Pa. ... 4
Hazard T. D. 204 Pearl N. Y. ... 4

Iron, Charcoal. *Warm or Cold Blast.*
Quincy John W., 98 William, N. Y. ... 4

Iron Commission Merchants.
Adams Hugh W., 56 Pine, N. Y. ... 4
Lowe S. B., Chattanooga, Tenn. ... 4
Spooner & Collins, St. Louis, Mo. ... 4
Thomson John H. & Co., 32 Pine, N. Y. ... 4

Iron, Pig, *Importers of.*
Williamson James & Co., 69 Wall, N. Y. ... 4

Iron Dealers.
Abeel Brothers, 190 South, N. Y. ... 4
Bonnell, Botsford & Co., Youngstown, O. ... 4
Borden & Lovell, 70 and 71 West, N. Y. ... 4
Cooney Daniel F., 83 Washington, N. Y. ... 4
Huerstel G., 99 Market Slip, N. Y. ... 4
Fuller, Lord & Co., 139 Greenwich, N. Y. ... 4
Harrison & Gilloon, 558 to 562 Water, N. Y. ... 4
Jackson & Chase, 206 and 208 Franklin, N. Y. ... 4
Judson B. F., 457 and 459 Water, N. Y. ... 4
Ogden Wallace, 85, 87, 89 and 91 Elm, N. Y. ... 4
Pierson & Co., 24 Broadway, N. Y. ... 4
Quincy John W., 98 William, N. Y. ... 4
Randall & Jones (Taylor Iron), 10 Oliver, Boston, Mass. ... 4
Reed John H. & Co. ... 6
Richards D. W. & Co., 92 Mangin St., N. Y. ... 4
Wallace Wm. H. & Co., Albany and Washington streets, N. Y. ... 4
Warner A. B. & Sons, 28 and 29 West, N. Y. ... 4
Williamson James & Co., 69 Wall, N. Y. ... 4
Whitney A. R. & Bro. 58 Hudson N. Y. ... 4

Iron. (*Manufacturers' Agents.*)
Levis & Kimball, Philadelphia, Pa. ... 5

Iron. *Manufacturers of.*
Boston Rolling Mills, 17 Batterymarch, Boston ... 4
Bradley, Reis & Co., 24 Cliff, N. Y. ... 4
Burden Iron Works, Troy, N. Y. ... 4
Cleveland Rolling Mill Co., Cleveland, O. ... 6
Everson, Macrum & Co., Pittsburgh, Pa. ... 4
Kirkpatrick, Beale & Co., Pittsburgh, Pa. ... 6
Leonard John, 450 & 451 West st. N. Y. ... 4
Oxford Iron Co., 81 Washington, N. Y. ... 4
Phœnix Iron Co., 410 Walnut, Phila. ... 5
Rowland James & Co., 920 N. Delaware, Phila. ... 5
Rowland Wm. & Harvey, Phila. ... 44
Schoenberger & Co., Pittsburgh, Pa. ... 4
Susquehanna Iron Co., Columbia, Lancaster Co. Pa. ... 5
The Passaic Rolling Mill Co., Paterson, N. J. ... 4
U. S. Iron and Tin Plate Co., Pittsburgh, Pa. ... 4
Zug & Co., Pittsburgh, Pa. ... 4

Iron, Planished Sheet *Manufacturers of*
Wood W. D. & Co., Pittsburgh, Pa. ... 5

Iron Pipe. (Tin Lined.)
Tatham & Bros., 82 Beekman, N. Y. ... 3

Iron Railings, etc.
Nellis A. J. & Co., Pittsburgh ... 26

Iron, Swedish. *Importers of.*
Mitander Nils, 69 William, N. Y. ... 4

Ironware (Granite.)
St. Louis Stamping Co., St. Louis, Mo.

Japanese Paper Ware.
Jennings Bros., 352 Pearl, N. Y. ... 7

Japans (Copal.)
Moller & Schumann, Marcy & Flushing Avenues, Brooklyn, N. Y. ... 39

Knob Screws.
Thurston Knob Screw Co., Marlboro', N. H.

Lanterns. *Manufacturers of.*
Dietz R. E., (Tubular) 54 and 56 Fulton, N. Y. ... 44
Howard & Morse 45 Fulton, N. Y. ... 2

Lathe Dogs.
North Selden G., Philadelphia ... 26

Lathes.
Johnson, Jr. Israel H. & Co., Philadelphia ... 28
Shepard H. L. & Co., Cincinnati, O. ... 40

Lead Pipe, &c., *Manufacturers of.*
Bayley, Farrell & Co., Pittsburgh, Pa. ... 2

Levels.
Disston Henry & Sons, Phila.

Locks. *Manufacturers of*
Baldwin Lock Co., Tioga, Pa. ... 26
Bohannan Wilson, Broadway and Kossuth, Brooklyn E. D. ... 32
Romer & Co., Newark, N. J. ... 32
Union Nut Co., 78 Beekman, N. Y. ... 38
Yale Lock Mfg. Co., 298 Broadway, N. Y. ... 7

Machinery. *Makers of.*
Bliss & Williams, 167 Plymouth, Brooklyn ... 43
Passe Ernest, Cincinnati, O. ... 12
Pittsburgh Mfg. Co., Pittsburgh, Pa. ... 43
Pratt & Whitney Co., Hartford, Conn. ... 42
Sellers Wm. & Co., 1600 Hamilton Phila. ... 43
The Bullard Machine Co., 14 Dey, N. Y. ... 20
Wetherill Robert & Co. Chester, Pa. ... 42

Machine Screws. *Makers of.*
Lyon & Fellows Mfg. Co., Williamsburg, N. Y. ... 12

Machinists' Tools. *Makers of.*
Blaisdell P. & Co., Worcester Mass. ... 42
Prentiss H. & Co., 14 Dey, N. Y. ... 12

Machinists.
Leng & Ogden, 212 Pearl, N. Y. ... 30

Malleable Iron Castings. *Maker of.*
Hammer & Co., Branford, Ct. ... 42

Measuring Tapes.
Eddy Geo M. & Co., 353 Classon Ave., Brooklyn, N. Y. ... 6

Mallets.
N. Y. Handle & Mallet Works, 456 E. Houston ... 30

Manganese.
Pyrolusite Manganese Co., 214 Pearl, N. Y. ... 36

Meat Choppers.
Goodell & Co., Antrim, N. H. ... 9
Kinyon Bros., Raritan, N. J. ... 7

Meat Chopping Machinery.
Murray Iron Works, Burlington, Iowa ... 36

Metal Dealers and Brokers.
Crane U. O., 104 John, N. Y. ... 4
Dickerson, Van Dusen & Co. 29 & 31 Cliff, N. Y. ... 2
Gregg H. L. Co, 108 Walnut, Phila. ... 5
Phelps, Dodge & Co., Cliff, bet. John & Fulton, N. Y. ... 2
Purves A. & Son, cor. South and Penn, Phila. ... 5
Quincy J. W., 98 William, N. Y. ... 31
Sellew R. & Co., St. Louis Mo. ... 2

Metal Elbows.
Hogen Elbow Co., Cleveland, O. ... 40

Metallurgists.
Britton J. Blodgett 339 Walnut Phila. ... 6

Metals Perforated.
Hayes G., 71 8th ave. ... 2

Metal Roofing.
Brass Goods Mfg. Co., 280 Pearl N. Y. ... 2

Mica.
The Chester Mica and Porcelain Co., 87 Liberty, N. Y. ... 8

Miners' Candles. *Makers of*
James Boyd's Sons, 10 and 12 Franklin, N. Y. ... 42

Models.
Lennox & Paine, Cleveland, O. ... 38

Mouse Traps, Catchemalive, *Makers of.*
Dietz R. E., 54 and 56 Fulton, N. Y. ... 44

Mowing Machine Knife Grinder.
Fisher Henry, Canton, O. ... 36

Nails
Aurora Iron & Nail Co., Aurora, Ind. ... 8
Schoenberger & Co., Pittsburgh, Pa. ... 4
Zug & Co., Pittsburgh, Pa. ... 4

Nail Machinery.
Coyne & Hatry, Pittsburgh, Pa. ... 4

Nail Pullers.
Maltby, Curtiss & Co., 34 Reade, N. Y. ... 6

Nickel Platers.
Hartman John, 37½ N. Seventh, Philadelphia ... 31
Jackson Geo. W., 21 E. 13, N. Y. ... 31
Manhattan Nickel Works, 180 and 182 Center, N. Y. ... 31
Wilder Wm. J., 114 Fulton, N. Y. ... 31

Nickel Platers' Supplies.
Colt A. T., 47 Beekman, N. Y. ... 31
Zucker & Levett, 639 & 641 W. 51st, N. Y. ... 31

Norway Shapes. *Rollers of.*
Rowland Wm. & Harvey, Frankford, Phila. ... 44

Note Broker.
Gallaudet P. W. 3 and 5 Wall, N. Y. ... 4

Nuts, Bolts, etc., *Makers of.*
Clark Bros. & Co., Milldale, Conn. ... 12
Fuller Bros. & Co., 139 Greenwich, N. Y. ... 4
Haskell W. H. & Co., Pawtucket, R. I. ... 13
Lewis, Oliver & Phillips, Pittsburgh, Pa. ... 13
Russell, Birdsall & Ward, Port Chester, N. Y. ... 44
Shelton Co., Birmingham, Conn. ... 44
Sternbergh J. H., Reading, Pa. ... 44
Union Nut Co., 78 Beekman N. Y. ... 38

Oil Cook Stoves.
C. Reissner & Co., 242 Pearl, N. Y. ... 18

Oil Lubricating. *Makers of*
Lester Oil Co., 82 Maiden Lane, N. Y. ... 42

Old Iron, etc.
Gregg H. L. & Co., 108 Walnut, Philadelphia ... 5

Packing (Steam).
Symonds & Co., Philadelphia ... 42

Paint (Iron).
Pittsburgh Iron Paint Co., Pittsburgh, Pa. ... 37

Paints and Oils. *Dealers in.*
Devoe F. W. & Co., 117 Fulton, N. Y.

Pans. (Dripping and Bread.)
Lewis, Dalzell & Co., Pittsburgh, Pa. ... 3

Patent Solicitors.
Howson & Son, Phila. and Washington, D. C. ... 18
Spencer A. H. 48 State, Boston, Mass. ... 26

Pens (Steel).
Perry & Co., Limited, 112 & 114 William, N. Y. ... 26

Picks, *Makers of*
Pierson & Co., 24 Broadway, N. Y. ... 2

Pipes, Fittings, etc., *Makers of.*
Eaton, Cole & Burnham Co., 58 John, N. Y. ... 30
McNab & Harlin Mfg. Co., 56 John, N. Y. ... 3
Pancoast & Maule, 227 Pear, Phila. ... 30

Pipe, Water and Gas. *Makers of.*
McNeal & Archer, Burlington, N. J. ... 6
Wood R. D. & Co., 400 Chesnut, Phila. ... 3

Plane Irons. *Manufacturer of*
Buck Bros., Millbury, Mass. ... 18
D. R. Barton Tool Co., Rochester, N. Y. ... 13

Planes. *Manufacturers of*
D. R. Barton Tool Co., Rochester, N. Y. ... 13
Stanley Rule & Level Co., 35 Chambers, N. Y. ... 3

Plated Ware
Derby Silver Co., Derby, Ct. ... 44
Hall, Elton & Co., 75 Chambers, N. Y. ... 11

Pliers.
Hagstoz & Thorpe, Ledger Building, Phila. ... 11

Plows.
Meikle Thomas & Co., Louisville, Ky. ... 12

Plows, Chilled Iron. *Makers of.*
South Bend Iron Works, South Bend, Ind. ... 41

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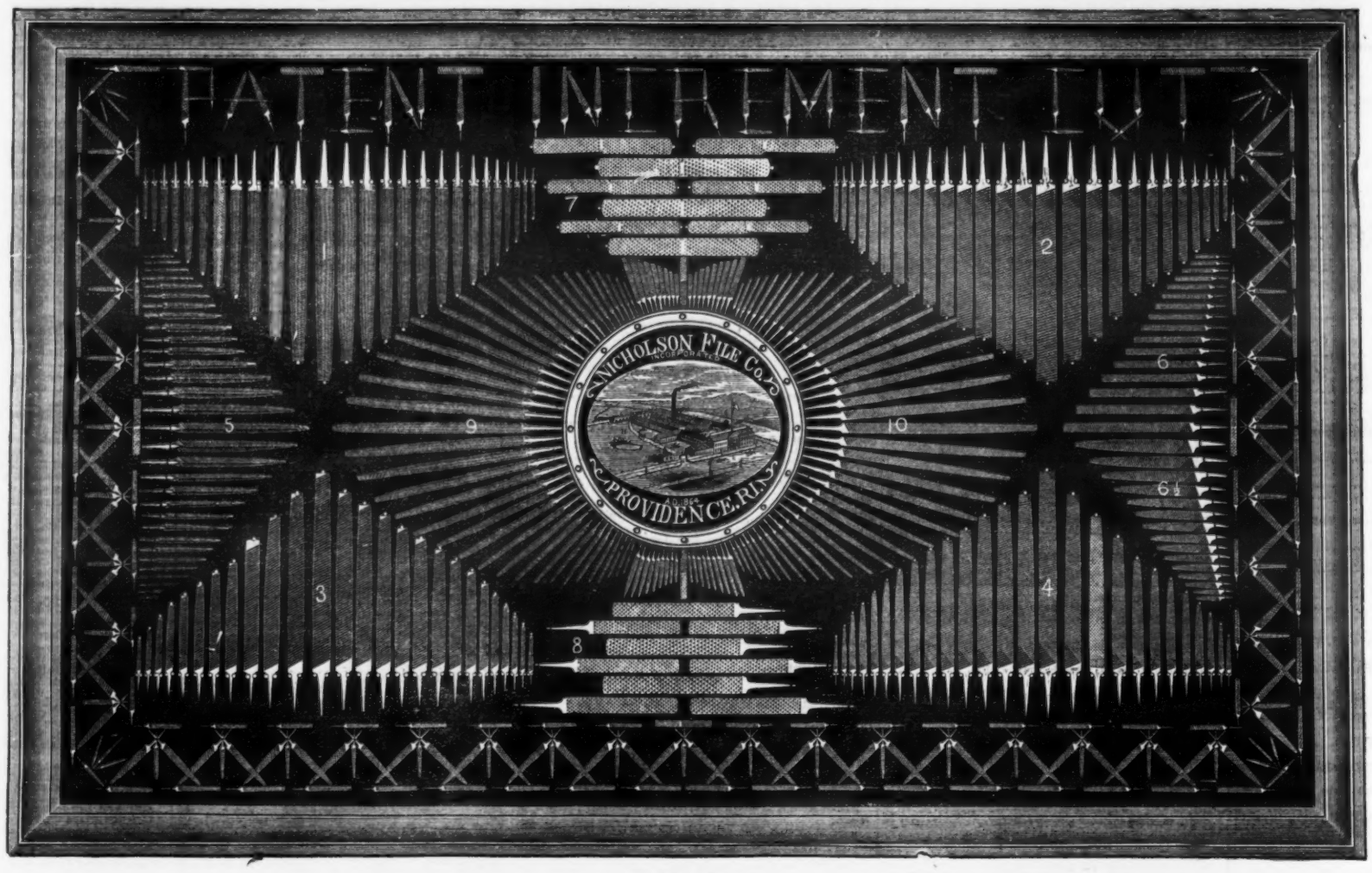

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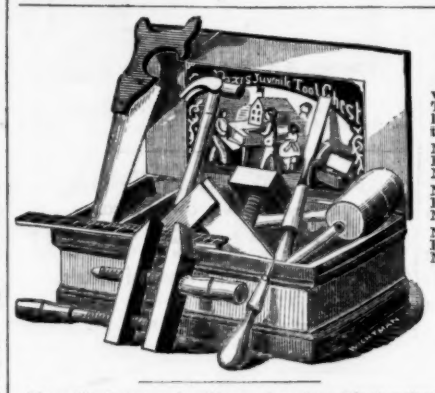

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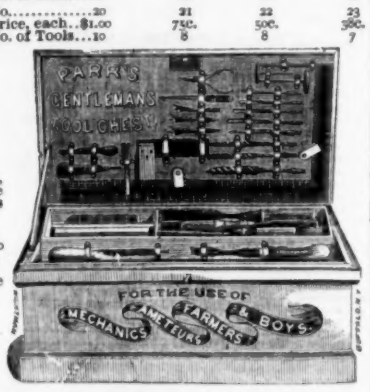

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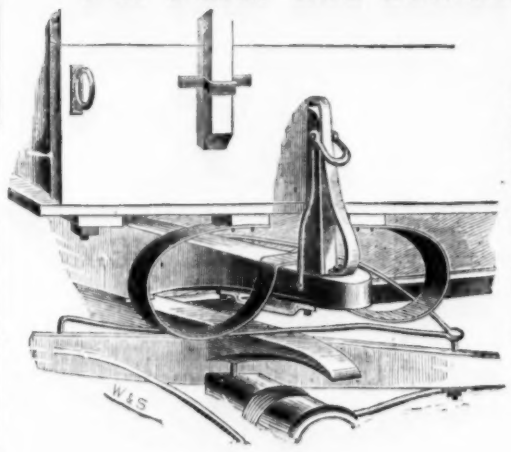

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Tobacco Cutters,
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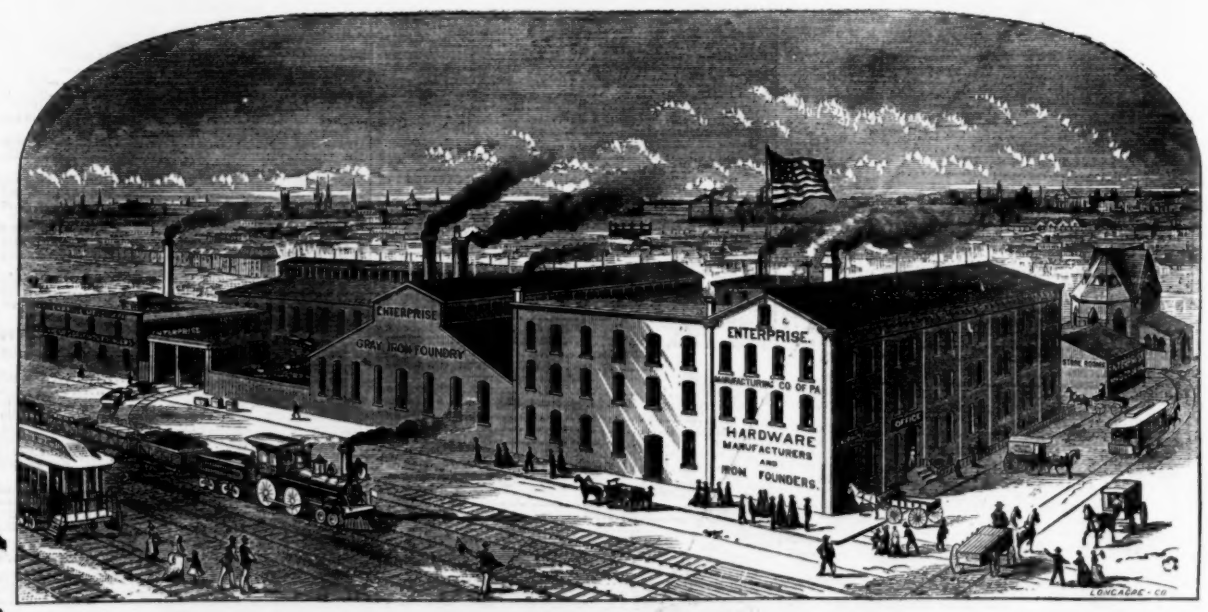
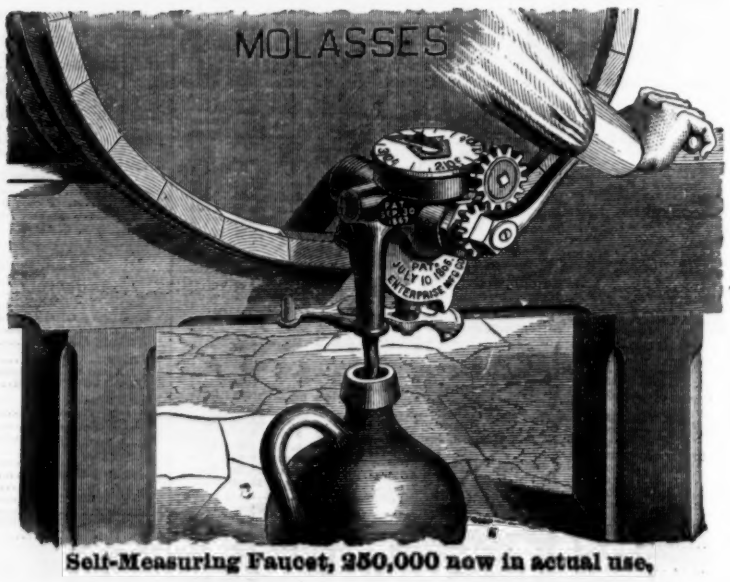


VIEW OF WORKS.

Self-Weighing Cheese Knife.

Sausage Stuffer, Fruit, Lard and Jelly Press combined, (Shut.)



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" " Blake's ... $20—dis 40 %
" " Parmelee's ... small, $20; large, $26 ... dis 25 %
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" " Ct. Valley Mfg. Co ... dis 30&10 %
" " Hartwell's ... dis 50&10 %
" " Douglass' ... dis 40 %
" " Ives' ... dis 40&10 %
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L'Hommedieu's Ship Augers ... dis 15 %
Watrous Ship Augers ... dis 15 %

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Awls Sewing, Common ... ℘ gross $1.35—dis 25 %
" Sewing, Best ... ℘ gross 1.60—dis 10 %
" Shouldered Peg ... ℘ gross 2.25—dis 15 %
" Patent Peg ... ℘ gross .60—dis 15 %
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All other Spring Balances ... dis 25 %
Bands.—Plated ... new list dis 50&5 %
Iron Rim ... new list dis 25&5 %
Brass (Plated list) ... new list dis 50, 10&5 %
Oroide ... new list dis 50&5 %

Bed Keys.
Gray's Ratchet ... ℘ doz $4.00 dis 15 %

Bells.
Hand, Light Brass ... dis 75 %
" Extra Heavy ... dis 40&5&10 %
" White Metal ... dis 60&5 %
" Silver Chime ... dis 20&10 %
" Swiss ... dis 25 %
" Globe (Cone's Patent) ... dis 20&10 %
Gong, Abbe's ... dis 20&10 %
" Yankee ... dis 35&10 %
" Barton's ... dis 40&2 %
Crank, Taylor's ... dis 25&10 %
" Brook's ... dis 50 %
" Cone's ... dis 10 %
" Connel's ... dis 50&10 %
Lever, Sargent's ... dis 60&10&10 %
" Taylor's Bronze or Plated Lever ... net
" " Japanned Lever ... dis 25&10 %
" Hart, Bliven & Mead Mfg. Co ... dis 50&10 %
Pull, " " " ... dis 50&10 %
" Brook's ... dis 50 %
" Western ... dis 25&10 %
Call ... dis 20 %
Cow, Common Wrought ... dis 20&10 %
" Western ... dis 20&10 %
" " Sargent's ... dis 60&10 %
" Kentucky "Star" ... dis 20&10 %
" " Sargent's ... dis 60&10 %
" Dodge's Genuine Kentucky, new list—

Nos.	0	1	1½	2	3	4	5	6	Hog	
	$12.00	10.00	9.00	8.00	6.00	5.00	3.50	2.50	5.00,	dis 50 %

" Yaw's Genuine ... dis 50 %
" Texas ... dis 40 %

Bellows.
Blacksmiths', Common ... dis 30 %
" Extra and Pittsburgh Pattern ... dis 20 %
Moulders' ... dis 25 %
Hand Bellows ... dis 20&10 %
Blind Adjusters.—Domestic ... ℘ doz $3.00, dis 20 %
Blind Fasteners.
Mackrell's ... dis 30 %
Van Sand's ... No. 2000, $14.00, dis 25 %
" old pattern ... ℘ gross, $10.50, dis 5 %
Washburn's Patent ... ℘ gross $14.00, dis 25 %
Merriman's ... new list net
Security Blind Fast ... ℘ gross $14.00, dis 10 @ — %
Blind Staples.
Boardman's Patent, ⅝ in. and larger ℘ ℔ 41c. dis 10&5 %
" ⅜ in. ... ℘ ℔ 46c. dis 10&5 %

Blocks.
Differential Pulley Blocks ... dis 20 %
Tackle, Rope and Iron Strapped. Providence Tool Co.'s list ... dis 40 %
Stanley Rule and Level Co ... dis 25&10 %
Blowers.
Keystone Portable Forge Co ... dis 20 %
Bolts.
Cast Iron Barrel, Shutter, &c ... dis 60&10&10 %
Cast Iron Chain (Sargent's list) ... dis 60&10&10 %
Bush's Lever Bolts ... dis 40, 10&10 %
Wrought Iron Barrel ... dis 50, 10&10 %
" " Square ... dis 50, 10&10 %
" " Shutter (Stanley's list) ... dis 50 %
" " " (Sargent's new list) . dis 50, 10&10 %
" " Sunk Flush, Sargent's ... dis 50&10&10 %
" " " " Stanley's ... dis 15&10 %
" " B.K.Flush, Comm'n, Stanley's . dis 30&10 %
" " " " Ex. Heavy, " dis 20&10 %
" " Plated Knob & Slide Flush " dis 10&10 %
Carriage and Tire, Common ... dis 75&3 % cash
" " Norway Iron ... dis 70 %
" " R. B. & W ... (old list) dis 65&5 %
" " Philadelphia ... dis 60&20 %
" " Coleman ... dis 60&10 @ 60&20 %
" " Shelton's ... (old list) dis 65&5 %
Star (Phila) ... dis 60&10@60&20 %
Union Nut Company, old list ... dis 60&5 %
Stove—American Screw Co.'s ... dis 45 @ 50 %
" R. B. & W ... dis 50 %
" Shelton's Shaved Head ... dis 45 @ 50 %
" Union Nut Co ... dis 45 %
Plow, R. B. & W ... dis 45 %
Machine ... dis 65 %
Bolt Ends ... dis 60 %
Borax ... 12 @ 12½c ℘ ℔

Boring Machines.	Upright.	Angular.
Hovey's, no Augers	$3.75	$5.00 dis 35 %
" with Augers	7.00	8.25 dis 35 %
Parr's, no Augers	5.00	7.50 dis 30 %
" with Augers	7.50	10.00 dis 30 %
Kellogg's, no Augers	5.25	6.75 dis 15 %
Sweets' "	3.25	4.00 net
" with Augers	5.00	6.00 net
Snell's, no Augers	4.75	6.25 dis 25 %
Phillips' with Augers	....	10.00 dis 25 %
Douglass', no Augers	5.50	7.00 dis 40&10 %
" with Augers	11.00	9.00 dis 40&10 %

Bow Pins.
Union Nut Co ... dis 60&5 %
Hotchkiss' ... low list dis 10 %
Humason, Beckley & Co.'s ... dis 60 %
Sargent & Co.'s ... $19.70 and $21.40, dis 60&10 %
Braces.—Barber's Patent ... dis 40&5 %
O. S. Backus ... dis 50&10 %
Wilson Mfg. Co ... dis 10 %
Spofford's Patent ... dis 50 %
Noble's Patent ... dis 40&5 %
Ives' "Centennial" ... dis 40&10 %
Common Ball (American) ... dis 25&10 %
Brackets.—Shelf (Sargent's) .. dis 60&10 @ 60&10&10 %
Bright Wire Goods ... dis 70&5&10 %
Bull Rings.—Union Nut Co ... dis 50&20 %
Sargent's ... dis 66⅔&10 %
Hotchkiss' ... low list dis 10 %
Humason, Beckley & Co.'s ... dis 60 %
Union Nut Co ... dis 60&5 %

Butts.
Wrought Brass ... dis 70 % @ —
Cast Brass ... dis 20 %
COMMON CAST, NOT DRILLED.
Fast Joint, Narrow ... dis 50 %
" Broad ... dis 60 %
Loose Joint, Narrow and Broad ... dis 65 %
Parliament Butts and Mayer's Hinges ... dis 60 %
Loose Pin ... dis —
Loose Pin Japanned ... dis —
Loose Pin Jap'd, Plated Tips ... dis —
DRILLED AND WIRED.
Fast Joint, Narrow ... dis 45 %
" Broad ... dis 55 %
" Broad, Japanned ... dis 50 %
Loose Joint ... dis 62½ %
" Japanned ... dis 62½ %
Parliament and Mayer's Hinges ... dis 50 @ 60 %
Loose Pin, no Acorn ... dis 65 %
" Acorns ... dis 62½ %
" " Japanned ... dis 65 %
" " Plated Tips ... dis 62½ %
} 10 per cent. extra discount.
Union Mfg. Co.'s Fancy Butts—
Figured Enameled Loose Joint ... dis 60&10 %
Boston Finish, Plain ... dis 80&10 %
" with Iron Acorns ... dis 75&10 %
" with Silvered Acorns ... dis 65&10 %

WROUGHT IRON.
Fast Joint, Narrow ... dis 40&10 %
" Lt. Narrow ... dis 30&10 %
" Broad ... dis 40&10 %
Loose Joint, Broad ... dis 40&10 %
Table Butts, Back Flaps, &c ... dis 35&10 %
Inside Blind, Regular ... dis 35&10 %
" " Light ... dis 40&10 %
Loose Pin, Wrt ... dis 40&10 %
Am. Spiral Spring Butt Co., Japanned ... dis 25 %
" " " Fancy ... dis 10 %
Sabin Mfg. Co., Double Acting ... dis 35 %
Union Spring Hinge Co ... dis 25 %
" Mfg. Co. Spring Hinges ... dis 25 %
Blind Butts, Parker ... dis 60&10 %
" Palmer ... dis 40&10 %
" Seymour ... dis 60&10 %
" Shepard ... dis 60 %
" Lull & Porter ... dis 60 %
" Nicholson ... dis 45&10 %
" Huffer ... dis 33⅓&10 %
" Garretson ... dis 60 %
" Clark's, Nos. 1, 3, 5, 40 and 50 ... dis 60 %
" " Nos. 2, 4, 4½, 6, 8, 10 ... dis 50&10 %
" Sargent's ... dis 70&5&10 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co ... dis 20 %
D. R. Barton Tool Co ... dis 20 %
Bradley's ... dis 25 %
Beatty's ... dis 25 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36.50

Hart Mfg. Co ... dis 50&10 %

0	1	2	3	4	5	6
$20.00	26.00	29.50	33.00	37.00	41.00	45.00

Can Openers.
Messenger's Comet ... ℘ doz $3.00, dis 20 %
American ... ℘ doz $2.25, dis 50&5 %
Lyman's ... ℘ doz $3.75, dis 20 %
No. 4, French ... ℘ doz $2.25, dis 50 %
No. 5, Iron Handle ... ℘ doz $2.25, dis 50&5 %
Sprague's ... Nos. 1 2 3
℘ doz $2.00 2.25 2.50 dis 25 %
Eureka ... ℘ doz $2.50, dis 10 %
Sardine Scissors ... ℘ doz $7.00, dis 40 @ 40&5 %
Star ... ℘ doz $5.00, dis 25 %

Caps—Percussion, ℘ 1000.
Hicks & Goldmark's G. D. & S. R ... 37 @ 40c
" " E. B. 1-10 Ground ... 70c, dis 6 %
" " E. B. 1-10 Turned ... 65c, dis 5 %
" " D. W. P. 1-10 ... $1.40, dis 5 %
" " D. W. P. ¼ ... 1.35, dis 5 %
" " Colt's 1-10 ... 70c, dis 5 %
Ely's E. B ... 1-4s, 58c.; 1-10s, 70c. gold
" Double Waterproof, 1-4s, $1.50; 1-10s, $1.58c, gold
Colt's ... 1-10s, 80c, gold
Cartridges.—Metallic ... dis 62½ %
Cards.—Horse and Curry ... dis 30&10 %
Cotton ... dis 10&10 %
Wool ... dis 15&10 %
Carpet Stretchers.
Cast Steel, Polished ... ℘ doz $5.00, dis 30 %
" Iron, Steel Points ... ℘ doz $2.00, dis 45&5 %
Casters.
Bed ... dis 55 %
Plate and Shallow Socket ... dis 55 %
Deep Socket ... dis 40 %
Cattle Leaders.
Hotchkiss' Sons' ... dis 10&10 %
Humason, Beckley & Co.'s ... dis 60 %
Sargent's ... dis 60&10 %
Union Nut Co ... dis 60&5 %
Chain.
Trace, 6½-1-2 ... by the cask, ℘ pair, gold, 45 @ 46c
" 6½-10-3 ... by the cask, ℘ pair, gold, 43 @ 44c
" 7-10-2 ... by the cask, ℘ pair, gold 49 @ 50c
German Halter Chain ... dis 30&5 % gold
" Coil ... dis 30&5 % gold
Galvanized Pump Chain ... ℘ ℔ 10½c dis 10 %
Jack Chain, Iron ... dis 55&10 %
" Brass ... dis 45&10 %

Chalk.
White ... ℘ gross 55c net
Red ... ℘ gross 75c net
Blue ... ℘ gross 90c net
White Crayons ... ℘ gross 13½c net
Chisels.
D. R. Barton Tool Co. (all kinds) ... dis 20 %
Socket Framing, Crossman ... dis 60&5&10 %
" " Buck Bros ... new list, dis 17½ @ 20 %
" " Hart Mfg. Co., No. 1 ... dis 65&5&10 %
" " Merrill ... dis 60&10 %
" " Witherby Tool Co ... dis 60&10 %
" " Douglass' ... dis 70 %
" Firmers, Crossman ... dis 60&10 %
" " Buck Bros ... new list, dis 17½ @ 20 %
" " Hart Mfg. Co., No. 1 ... dis 65&5&10 %
" " Merrill ... dis 60&10 %
" " Witherby Tool Co ... dis 60&10 %
" " Douglass' ... dis 70 %
" Corner ... dis 65&70 %
Tanged Firmers extra ... dis 40 %
" " Butcher's ... $5.00 @ $5.25 to £ gold
" " Newbould's ... 5.50 to £ gold
" " Spear & Jackson's ... 5.00 to £ gold
" " Buck Bros (Shank) ... 5.25 to £ gold

Clamps.
Iron, Providence Tool Co.'s, Wrt. Iron ... dis 25 %
" Adjustable, Gray's ... dis 20 %
" " Lambert's ... dis 20 %
" " Snow's ... dis 40&5 %
" " Hammer's ... dis 15 %
" Cabinet, Sargent's ... dis 60&10 %
" Carriage Makers', Sargent's ... dis 60&10 %
Coffee Mills.
Board and [illegible]on's ... dis 25 %
Increase Wil[illegible] ... $9.50, $10.50, dis 25 %
Selsor's Pat[illegible]
American (Ente[rp]rise Mfg. Co.) ... dis 20 %
French Steel ... dis 20 %
The Swift ... dis 25 %
Compasses and Dividers.
Compasses ... dis 35&10 %
Dividers ... dis 45&10 %
Bemis & Call Co.'s Compa[ss]es and Dividers .. dis 35&10 %
Cook's ... dis 15 %
Excelsior ... dis 40 %
Miller's Patent ... dis 25 %
Coopers' Tools.
[illegible] ... dis 15 @ 20 %
Bradley's ... dis 20 @ 25 %
Chas. E. Little ... dis 20 %
D. R. Barton Tool Co ... dis 33⅓ %
Corkscrews.—Humason & B[illegible]
Corn Knives and Cutters. ... dis 10 %
Bradley's
Crow Bars.
Cast Steel ... ℘ ℔ 9c net
Iron, Steel Points ... ℘ ℔ 5c
Crucibles.—Gautier & Co ... ℘ No. 5½c
Curling Irons, &c.
⅛, ⅝, ¾ in., $1.80, 2.00, 2.40 ... dis 10 %
Curling Tongs ... ℘ doz $6.5[illegible] dis 15 %
Pinching Irons ... ℘ doz 7.50, dis 20 %
Curry Combs.
Curry Comb Mfg. Co ... dis 2[illegible]10 %
Fitch's (List of No. 240, $1) ... dis 3[illegible]10 %
Hotchkiss' & Kellogg's, Iron & Brass, old list . dis 40&[illegible] %
Hotchkiss' Novelty ... dis 10&[illegible] %
Rubber ... ℘ doz $9.00, dis 15 [illegible]
Wood Tooth (Fuller Bros.) ... ℘ doz $2.25, n[et]
Clips, Axle.
Norway or Best ... dis 50 %
Superior ... dis 55 %
Cockeyes ... 1¼ in., 28c.; 1½ inch, 33c.; 1¾ in., 37c, net
Cocks.
Brass Racking ... dis 50 %
Lock and Globe ... dis 50 %
Lever Bibbs ... dis 50 %
Ale and Beer ... dis 40 @ 45 %
Curtain Pins.—Silvered Glass ... new list, dis 15 %
Cutlery.
Meriden Cutlery Co. (Table) ... net
Am. Miller Bro.'s Cutlery Co ... dis 25 %
Naugatuck Cutlery Co ... list net
New York Knife Co. (Pocket) ... dis 35&5 % cash
" " (Table) ... net
Rogers Cutlery Co ... net
Humason & Beckley Mfg Co ... dis 25 %

Dippers.
Britannia ... ℘ doz $3.75 @ $4.25, net
Cocoa, Plain ... ℘ doz $3.25, dis 20 %
" Rimmed ... ℘ doz 3.75, dis 20 %
Dog Collars.
Embossed Gilt ... dis 20 %
Leather ... dis 30 %
Brass ... dis 25 %
Door Springs.
Torrey's Rod ... ℘ doz $2.00 @ $2.10, net
Gray's " ... ℘ doz $2.00, net
Johnson's Rod ... ℘ doz 3.00, net
Gem (Coil)—
No. 1, Large, Japanned ... ℘ doz $3.50 }
No. 2, Medium, " ... ℘ doz 2.50 } dis 10 %
No. 4, Small, " ... ℘ doz 2.00 }

Challenge (Coil)—	Nos. 9	7	6	
Japanned ... ℘ doz	$2.00	2.50	3.50	dis 15 %
Coppered ... ℘ doz	4.00	4.50	5.00	
Galvanized ... ℘ doz	3.50	4.00	4.50	
Nickeled ... ℘ doz	5.50	6.00	7.00	

Premium (Coil)—	Nos. 1	2	3	
Japanned ... ℘ doz	$7.50	6.25	5.00	dis 30 %
Nickeled ... ℔ doz	11.00	9.50	8.00	

Star (Coil)—For Cop'd, Nickel-Plated, &c., see list.
No. 5, Small ... ℘ doz $2.00 }
No. 6, Medium ... ℘ doz 2.50 } dis 15 %
No. 7, Large ... ℘ doz 3.50 }
Philadelphia ... 5 in., $5.00; 8 in., $7.00, dis 30 %
Barker's Concealed ... dis 15 %
Drawing Knives.
Crossman's No. 1 ... dis 60&5&10 %
D. R. Barton Tool Co ... dis 20 %
Hart Mfg. Co., No. 1 ... dis 65&5&10 %
Merrill ... dis 60&10 %
Nobles Mfg. Co ... dis 15 %
Bradley's ... dis 35 %
Adjustable Handle ... dis 20 %
Witherby Tool Co ... dis 60&10 %
Douglass' ... dis 70 %
Drills and Drill Stocks.
Blacksmiths' ... each $2.25 net
" Self-Feeding ... each $7.50, dis 10 %
Breast, P. S. & W ... dis 25 %
Breast, Aiken's ... dis 25&10 %
" Hotchkiss ... dis 10 %
" Wilson's ... dis 20 %
" Miller's Falls ... each $2.50, dis 25 %
Ratchet, Merrill's ... dis 20 %
" Ingersoll's (old list) ... dis 35 %
" Whitney's ... dis 20 %
" Weston's ... dis 20 %
" Moore's Triple Action ... dis 20 @ 25 %
Wilson's Drill Stocks ... dis 10 %
Automatic Boring Tools ... each $2.75, dis 20 %
Drill Chucks.
Danbury ... each $8.00, dis 30 %

Morse's Beach Patent ... dis 30 %
" Adjustable ... each $10.00, dis 30 %
Egg Beaters.
Dover ... ℘ doz $5.00, dis 20 %
National ... ℘ doz $4.50, dis 33⅓ %
Schofield ... ℘ doz $3.50
Emery.
Genuine Chester—Regular Nos ... ℘ ℔ 6c } dis 10 %
" " Flour and FF ... ℘ ℔ 4c }
Washington Mills—Regular Nos ... ℘ ℔ 8c
" Flour ... ℘ ℔ 5c
Wellington Mills, Grain ... ℘ ℔ 10c net
" " Flour ... ℘ ℔ 8c net
Hampden Emery Grain ... 5c net
" " Flour ... 3c net
Enameled and Tinned Ware.
Kettles ... dis 40 @ 50 %
Sauce Pans ... dis 30 @ 35 %
Glue Kettles ... dis 30 @ 35 %
Tinned Sauce Pans ... dis 30 @ 35 %
Escutcheons.
Door Lock ... Same discounts as Door Locks
Brass Thread ... dis 60&10 %
Wood ... dis 25 %
Faucets.
Fenn's ... dis 50 %
Fenn's Cork Stops ... dis 40 %
Star ... dis 55&10 %
Frary's Patent Petroleum ... dis 20&10 %
Wood and Metallic ... dis 40 %
" Cork Lined ... dis 65&10 %
Enterprise Mfg. Co., Self-Measuring ... dis 20 %
Felloe Plates ... ℘ ℔ 15c, dis 50 %
Files.
American File Co ... $5.00 to £ currency, dis 30 %
Nicholson ... (Nicholson List) dis 25 %
Heller & Bros ... $5.00 to £ currency, dis 15 @ 20 %
Madden & Cockayne File Co ... $5.00 to £ cur., dis 25 %
Jowitt's ... $4.50 to £ gold
J. & Riley Carr ... 4.50 to £ gold
Stubs' ... 7.50 to £ gold
Butcher's ... 4.50 to £ gold
Walter Spencer & Co.'s "Diamond" ... 4.50 to £ gold
Fisher's ... 4.75 to £ gold
Moss & Gamble ... 4.75 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.). 4.50 to £ gold
" " Horse Rasps ... 4.75 to £ gold
H. Disston & Sons (new list) ... dis 30 %
Limet & Co. (French) ... $4.25 to £ gold
Boyton's Cant ... dis 40 %
Rothery ... dis 25 %
Fluting Machines.
Mrs. Knox, No. 1876 ... each $2.50 to $2.75 net
Knox Imperial, 1877 ... each $2.50 @ $2.75 net
Knox, 4-inch Rolls ... $2.50 each net
" 6 " " ... $2.75 @ $3.00 each net
" 8 " " ... 4.50 each net
Peerless, 4-inch Rolls ... 4.00 each net
" 5 " " ... 4.75 each net
Improved Knox (Climax), 4-inch ... 2.65 each net
" " " 6 " ... 3.15 each net
" " " 8 " ... 4.90 each net
Eagle, 3½-inch Roll ... $18.00 ℘ doz, dis 5 %
" 5½ " " ... 24.00 ℘ doz, dis 5 %
Empire ... $4.00 each net
Eureka, No. 1, 7-inch Roll ... 6.75 each net
" No. 2, 5-inch Roll ... 5.00 each net
Crown, 4½-in. Roll, $2.25; 6-in., $2.70; 8-in., $3.85 each, net
Domestic Fluter ... 1.50 each net
Geneva Hand Fluter ... 15.00 ℘ doz net
Combined Fluter and Sad Iron ... ℘ doz 15.00, dis 10 %
Fluting Scissors ... dis 40&10 %
Forges.
"Empire" ... dis 20 %
Keystone Portable Forge Co ... dis 20 %
Forks.
Hay, Manure and Spading ... dis 35 %
Plated A 1 ... dis 40&5 %
" Reed & Barton ... dis 40&5 %
Fruit and Jelly Presses.
Enterprise Mfg. Co ... dis 20 %
Fry Pans.
Burnished, P. S. & W., new list ... dis 60 %

No. ...	0	1	2	3	4	5	6	7	8
℘ doz ...	$3.00	$3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

Gauges.
Marking ... dis 45&10 %
" Star ... dis 35 %
Wire ... dis 10 %
" Smith's Patent ... ℘ doz $18.00, dis 40 %
Gimlets.
Nail and Spike ... dis 40 %
"Bee" Gimlets ... ℘ gross $12.00, dis 45 %
"Eureka" Gimlets ... dis 40 %
Double Cut, Shepardson's ... dis 30 %
" " Hartwell's ... dis 40 %
" " Ives' ... dis 40&10 %
" " Douglass' ... dis 40 %
Glue Pots.
Tinned and Enameled ... dis 35 @ 40 %
Family, Howe's "Eureka" ... dis 25 %
" L. F. & C.'s "Handy" ... dis 25 %
Grindstone Fixtures.
Sargent's Patent ... dis 70&10&10 %
Reading Hardware Co (New list) ... dis 40&10 %
Hart Mfg. Co., Nos 9 to 11 ... dis 75&7½&10 %
Rick Bros ... dis 45&5 %

Hammers.
Humason & Beckley Mfg. Co ... dis 33⅓ %
Maydole's (New list, Jan. 1, '77) ... dis 15 %
Henry Hammonds' (New list, Jan. 1, '77) ... dis 25 %
Cheney's Steel Face and Claw ... dis 10 %
" all Steel ... dis 20&10 %
Verree ... dis 5 %
Magnetic Tack ... dis 25&10 %
Warner & Noble's ... dis 10 %
Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4.00 ℘ pair } dis 25 %
" Leg Irons, $6.50 ℘ pair }
Providence Tool Co.'s Hand Cuffs, $15.00 ℘ doz } dis 10 %
" " Leg Irons, $25 ℘ doz }
Handles.
Door or Thumb Latches—

Nos ...	0	1	2	3	4	
Per doz ...	$0.80	1.00	1.18	1.35	1.50 ...	dis 60&10 %

Roggin's Latches ... 33c net
Bronzed Iron Drop Latches ... ℘ doz $1.00 @ $1.25 net
Jap'd Store Door Handles—Nuts, $1.80; Plate, $1.20; no Plate, 96c ... net
Wrought Chest ... dis 60&10 %
Surface Chest, Sargent's list ... dis 60&10&10 %
Flush Chest ... dis 60&10&10 %
Lifting ... dis 60&10 %
Saw and Plane ... dis 25&10 %
Boynton's X Cut (Loop) ... dis 20 %
" " (Centennial) ... dis 15 %
Hammer and Hatchet ... dis 10 %
North Carolina Handle Co ... dis 15 %
Brad Awl ... ℘ gross $3.75, dis 25&10 %
Hickery Firmer Chisel, assorted, ℘ gross $5.25
" " " large, " 6.50
Apple " " assorted, " 6.00
" " " large, " 7.50
Socket " " assorted, " 4.50
" Framing " assorted, " 7.00
File, assorted, ℘ gross ... 3.50
Auger, assorted, ℘ gross ... 6.00
" large, " ... 7.00
} dis 40 %
Patent Auger, Ives' ... dis 25&10 %
" Douglass' ... ℘ set $1.25, dis 10 %
" Swan's ... ℘ set $1, dis 20&10 %
Hangers.
[B]arn Door ... dis 70&10 %
" [illegible]Anti-Friction," No. 1, $1.25; No. 2, $1.50 ℘ pr., dis 40&10 %
No[ve]lty ... dis 40 %
Ch[a]llenge ... dis 50 %
Clim[a]x ... dis 40 %
Ha[rness Snaps.]
Hens[ha]w's ... List of 1½ changed to $14.00, dis 45 @ 50 %
Judd's ... " " " 14.00, dis 50 %
Fitch's (Bristol) .. " " " 14.00, dis 45 @ 50 %
Hotchki[ss'] ... dis 10 %
Andrews ... dis 45 %
Sargent's ... dis 60&10 %
New York Wire ... dis 20&20 %
"German" ... dis 60 %
Hatchets.
Isaiah Blood ... dis 15 %
Shingling, Nos. 1 2 3 ... ℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ... ℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ... ℘ doz 7.50 8.00 8.50
Hunt's ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ... ℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ... ℘ doz 7.50 8.25 9.00
Hurd's ... dis 30&10 %
Shingling, Nos. 1 2 3 ... ℘ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ... ℘ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ... ℘ doz 8.00 8.50 9.00
Simmon's ... dis 35 %
Shingling, Nos. 0 1 2 3 ... ℘ doz $7.50 $8.00 $8.50 $9.00
Claw, Nos. 1 2 3 ... ℘ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ... ℘ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4 ... ℘ doz 9.00 10.00 12.00 14.00
" Nos. 5 6 7 8 ... ℘ doz 16.00 18.00 20.00 22.00
Collins' ... dis 10 %
Shingling, Nos. 1 2 3 ... ℘ doz $6.00 $6.50 $7.00
Claw Nos. 1 2 3 ... ℘ doz 6.50 7.00 7.50
Lathing, Nos. 1 2 3 ... ℘ doz 6.00 6.50 7.00
Ten Eyck Axe Mfg. Co ... dis 35 %
Shingling, Nos. 1 2 3 ... ℘ doz $8.00 $8.50 $9.00
Lathing, Nos. 1 2 3 ... ℘ doz 8.00 8.50 9.00
Claw, Nos. 1 2 3 ... ℘ doz 9.00 9.50 10.00
Broad, Nos. 3 4 5 ... ℘ doz 13.00 14.50 16.00
" Nos. 6 7 8 ... ℘ doz 18.00 19.50 22.00
" No. 9 ... ℘ doz 25.00
D. R. Barton Tool Co ... dis 20 %
Shingling, Nos. 1 2 3 ... ℘ doz $11.00 $10.50 $10.00
Lath, Nos. 1 2 3 ... ℘ doz 10.50 10.00 9.50
Half Hatchets, Nos. 1 2 3 ... ℘ doz 11.00 10.50 10.00
J. P. Perree & Co ... dis 5 %
Shingling, Nos. 1 2 3 ... ℘ doz $7.00 $7.50 $8.00
Claw, Nos. 1 2 3 ... ℘ doz 7.50 8.00 8.50
Lathing, Nos. 1 2 3 ... ℘ doz 7.00 7.50 8.00
Underhill's ... dis 20 %
Shingling, Nos. 1 2 3 ... ℘ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3 ... ℘ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3 ... ℘ doz 12.00 11.00 13.00
M. H. Jones & Co ... dis 25 %
Shingling, Nos. 1 2 3 ... ℘ doz $8.00 $8.50 $9.00
Half Hatchets, Nos. 1 2 3 ... ℘ doz 8.00 8.50 9.00
Claw, Nos. 1 2 3 ... ℘ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3 ... ℘ doz 8.00 8.50 9.00
Broad, Nos. 2 3 4 ... ℘ doz 11.00 13.00 14.50
" Nos. 5 6 7 ... ℘ doz 16.50 18.00 19.50
Empire Hatchets, M. H. Jones & Co ... net
Shingling, Nos. 1 2 3 ... ℘ doz $4.75 $5.00 $5.25
Lath Nos. 1 2 3 ... ℘ doz 4.75 5.00 5.25
Half Hatchets, Nos. 1 2 3 ... ℘ doz 4.75 5.00 5.25
All pol. Sh'gling, Nos. 1 2 3 ... ℘ doz 5.25 5.50 5.75
Solid Steel Lath, Nos. 1 2 3 ... ℘ doz 7.25 8.50 7.75
Hay Knives.
"Lightning" ... ℘ doz $20.00 net
Wadsworth's ... dis 30 %

Hinges.
Gate, Western ... ℘ doz $6.25, dis 60&10 %
" N. E ... ℘ doz $10.13, dis 60&10 %
" N. Y. State ... ℘ doz $7.20, dis 60&10&10 %
" Clark's No. 1 ... ℘ doz $6.00, dis 45 %
" Automatic ... ℘ doz $12.50 dis 20&10 %
Rolled Plate ... dis 60&10 %
Rolled Raised ... dis 60&10 %
Wrought Strap and T ... dis 60&— %
Providence Plate { 6 to 10 in. 11c ℘ ℔ / over 10 in. 9½c ℘ ℔ } .. dis 40&10 %
Screw Hook and Strap ... { 8, 10, 12 in., 11c / 14 to 36 in., 9½c } dis 40&10 %
Heavy Welded Hook ... { 8 to 12 in., 11 c / 14 in. & up, 9½c } .. dis 30 %
Screw Hook and Eye ... { ⅜ to 1 in., 11 c / ⅝ in. 12½c / ½ in. 13 c } ... net
Hoes.
Solid Shank, C. S ... ℘ doz $8.00, dis 40 %
Socket ... ℘ doz 9.00, dis 40 %
Riveted Eye ... ℘ doz 4.75, dis 40 %
Grub ... dis 30 %
Planters' ... dis 20 @ 25&10 %
Scovill Pattern ... dis 20 @ 30 %
Lane's C. S. Crescent Planters, Amer. Pat'n .. dis 20&5 %
" Scovill Pattern ... dis 20 %
Handled Solid C. S. Shank ... dis 35 %
Planters', Handled ... dis 35 %
Scovill Pattern, Handled ... dis 35 %
Hick's Pat. Solid C. S. Planters' ... dis 20&10 @ 30 %
" " " Scovill Pattern ... dis 20&5 @ 25 %
Hooks.
Bird Cage, Sargent's list ... dis 60&10 %
Cotton ... dis 50 %
Belt ... dis 70 %
Bench—Hotchkiss', $5.00 ℘ doz ... dis 10 %
" Weston's, No. 1, $8.00; No. 2, $7.00 ℘ doz dis 5 %
" McGill's, $3.00 ℘ doz ... dis 10 %
" Skinner's, $6.25 per doz ... dis 20 %
Clothes Line, Hart's list ... dis 60&10&5&10 %
" " Sargent's list ... dis 60&10&10 %
" " Reading list ... dis 33⅓&5&10 %
Ceiling .. / Harness. { Hart's list ... dis 70&10 % / Sargent's list ... dis 60&5&10 % / Reading list ... dis 40&10 %
Coat and Hat, Hart's list ... dis 65&5&10 %
" " Sargent's list ... dis 60&10&10 %
" " Reading ... dis 40&10 %
Wrought Staples and Hooks and Staples ... dis 75 %
" Staples, Stanley's list ... dis 40 %
Wire Screw Hooks and Eyes ... dis 70&5&10 %
Grass ... dis 30 %
Whiffletree—Patent ... dis 40 %
Hooks and Eyes—Malleable Iron ... dis 60&10&10 %
" " Brass ... dis 60&10&10 %

Horse Nails ... dis 15@25 %

		Nos. 5	6	7	8	9	10
Ausable	℘ ℔	30c	27c	25c	24c	23c	22c
" P't'd and Pol'd.	"	31c	28c	26c	25c	24c	23c
" " and Blued	"	31c	28c	26c	25c	24c	23c
Cortland	"	29c	26c	24c	23c	22c	21c
" P't'd & Blued.	"	31c	28c	26c	25c	24c	23c
Buffalo Forged	"	31c	28c	26c	25c	24c	23c
Globe, P't'd and Pol'd.	"	31c	28c	26c	25c	24c	23c
National, Pointed and Polished, Pat. Fin.	"	28c	25c	23c	22c	21c	20c
National, Pointed and Polished, Ex. Fin.	"	30c	27c	25c	24c	23c	22c
Perkins' P't'd—Black.	"	26c	23c	21c	20c	19c	18c
Perkins' Pointed and Polished	"	27c	24c	22c	21c	20c	19c
Perkins' Pointed and Blued	"	27c	24c	22c	21c	20c	19c
Putnam Hammer, P't'd	"	32c	28c	26c	25c	24c	23c
Vulcan P't'd & Blued.	"	31c	28c	26c	25c	24c	23c
North Western Plain.	"	30c	27c	25c	24c	23c	22c
" " Fini'h'd	"	31c	28c	26c	25c	24c	23c

Horse Shoes.—Burden ... ℘ keg $4.02½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy ... ℘ keg 4.02½
Mule Shoes ... ℘ keg 5.02½
Perkins' Snow ... ℘ keg 5.02½
The Boston Horse Shoe ... ℘ keg 5.00

Ice Awls, Chisels, &c.
American Ice Chisel ... ℘ doz $6.50 net
National " ... ℘ doz $6.50, dis 10 %
Novelty Ice Breakers ... ℘ doz $6.50 net
White's Sliding Head Picks ... ℘ doz $2.50, dis 25 %
Dunlap's Ring Picks ... ℘ doz 3.00, dis 20 %
Wood Head Picks, Sargent's ... ℘ doz $1.85, dis 60&10 %
Iron " " ... ℘ doz 1.85, dis 60&10 %
Ice Mallets, Pick in Head ... ℘ doz $1.75 net
" Pick in Handle ... ℘ doz 3.00 net
Ice Axes, Small, Cast or Malleable ... ℘ doz 1.50 net
Kitchen Ice Tongs ... ℘ doz 2.25 net

Kettles.
Brass ... ℘ ℔ 45c net
Enameled ... dis 55 %
Knives.
Ames' Butcher Knives ... dis 20 %
" Shoe " ... dis 15 %
" Bread " ... ℘ doz $1.50, dis 15 %
Hay and Straw—"Wadsworth's" ... dis 30 %
Table and Pocket ... See Cutlery
Knobs.
Carriage (Jap'd 80c. ℘ gross) ... dis 60&10 %
Base—Common ... dis 30&10 %
" Plush Tip ... dis 10 %
" Elastic End, No. 8 ... dis 60&5 %
Door, Mineral / " Por. Jap'd / " " Plated / " " Por. } Same discounts as Door Locks.
Furniture, Plain ... 75c gross inch, dis 10 %
" Wood Screws ... dis 20 %

Ladles.
Melting—Hart's ... dis 55&10 %
" Sargent's ... dis 50&10 %
" Reading ... dis 15&10 %
" Monroe's Patent ... ℘ doz $4.00, dis 20 %
Lanterns.
Tubular ... No. 0, $10.00; No. 1, $12.50 / With Guards, 50c extra. } net
Peerless ... No. 5, ℘ doz $11.75, dis 10&10 %
Brady's Patent ... dis 10&10 %
Ætna ... dis 10&10 %
Yankee ... dis 10&10 %
De Beque ... dis 10&10 %
Police..Small, $7.50; Med., $9.00; Large, $12.00, dis 15@20 %
Lard Presses.
Draw Cut, 14 inch ... each $65.00, dis 20 %
Enterprise Mfg. Co ... dis 20 %
Lemon Squeezers.
Porcelain Lined ... ℘ doz $6.00 net
Eureka, Tinned ... ℘ doz $10.00, dis 10 %
Dunlap's Improved ... ℘ doz $6.00 net
Sammis' Patent ... No. 1, $7.50; No. 2, $12.00 ℘ doz ... dis 25&
Lines.—Linen Fish ... dis 25
Cotton Chalk ... dis 50 %
Sil. Lake Chalk ... Nos. 0, 1, 2, 3, $6.00, $6.50, $7.00, $7.50 ... dis 20 %
Mason's ... dis 20 %
Wire Clothes, Gal'd ... each 43 @ 50c net
Locks and Latches.
Cabinet—Gaylord / " Eagle } ... dis 25&2 %
Trunk ... dis 25 %
Langstroth & Crane's List Jan. 1, '77.
Round Key ... dis 40&10 %
Flat Key ... dis 33⅓&10 %
Barnes & Deitz, Flat Key ... dis 30 %
Yale Lock Co., Flat Key ... dis 40 %
Sargent & Greenleaf, Flat Key ... dis 35 @ 40 %
Shepardson's, Flat Key ... dis 35 %
American Lock Mfg. Co ... dis 33⅓ %
Plate ... dis 33⅓&5&2 %
DOOR LOCKS, &C.
Branford ... dis 60&10&2 %
Norwalk ... dis 50&10&2 %
Russell & Erwin ... dis 60&10&2 %
Mallory, Wheeler & Co ... dis 35&10&2 %
Padlocks—Russell & Erwin / " Mallory, Wheeler & Co / " Wm. Wilcox & Co } ... dis 33⅓&5 % and 2 % for cash
" American Lock Mfg. Co ... dis 33⅓ %
" Romer's ... dis 20 %
" Vulcan Hardware Co ... dis 20 %
" New York Lock Co ... dis 20 %
" J. H. McWilliams ... dis 10 %
" Barnes & Dietz ... dis 30 %
" Miller's Patent ... dis 50 %
" Penn Lock Works ... dis 33⅓ %
" " " (Scandinavian) ... dis 50 %

Mallets.—Hickory and Lignumvitæ ... dis 20 %
Meat Cutters.

Dixon's (P. S. & W.) Nos.	1	2	3	4	
℘ doz ..	$14.00	17.00	19.00	30.00	—dis 25 %

Miles' Challenge ... Nos.	1	2	3	
℘ doz ..	$22.00	30.00	40.00	—dis 30 %

Perry's Nos.	1	2	3	4	4 g'rd	5 g'rd	
Each ..	$3.00	4.00	5.00	11.00	13.00	30.00	—dis 20&10 %

Woodruff's (P. S. & W.) ... Nos.	100	150	
℘ doz ..	$15.00	18.00	—dis 20&10 %

Hales' ... Nos.	11	12	13	
℘ doz ..	$33.00	40.00	51.00	—dis 50&2 %

Draw Cut ... Nos.	5	2	5	8	10	
Each ..	$50.00	75.00	80.00	225.00	400.00	—dis 20 %

American ... dis 25 %

Nos ...	1	2	3	4	B	5
Each	$5.00	7.00	10.00	25.00	50.00	60.00

Molasses Gates.
Stebbins' Pattern ... dis 62½&10 %
" Genuine ... dis 60&10 %
" Tinned Ends ... dis 40&10 %
Bush's ... dis 20 %
Lincoln's Genuine ... dis 62&10 %
Weed's ... dis 15 %
Mortars and Pestles.
Iron ... net
Mortising Machines ... each $20.00, dis 20 %

Nails ... See Trade Report
Nuts and Washers.
Square and Hexagon ... 7½c off list

Oakum.
Best ... ℘ ℔ 10½c
U. S. Navy ... ℘ ℔ 9½c
Navy ... ℘ ℔ 8½c
Oilers.
Zinc and Tin ... new list, dis 45 %
Brass and Copper ... new list, dis 40 %
Olmsted's ... dis 40 %
Broughton's ... dis 33⅓ %
Malleable ... ℘ doz $5.00, dis 10 %
Prior's Patent or "Paragon" ... dis 45 %
Ox Balls ... dis 60&10 %

Pencils.
Faber's Carpenters' ... dis 10 %
" Round Gilt ... ℘ gross $6.00 net
Dixon's Lead ... ℘ gross 4.50 net

" Lumber ... ℘ gross 9.00 net
Picture Nails and Knobs.
Brass Head, Sargent's List ... dis 60&10 %
Porcelain Head " ... dis 60&10&10 %
" " Judd's List ... dis 40 %
Pinking Irons ... ℘ doz $2.75, dis 65&5&10 %
Plaiting Machines.
Astor Plaiting Machine ... each $15.00, dis 20 %
Planes and Plane Irons.
First Quality ... dis 35@40 %
Second " ... dis 50&10 %
Bailey's Patent Adjustable, new list Jan. '77, dis 25&10 %
Bailey's "Victor" " " dis 25&10 %
Defiance Adjustable, new list ... dis 25&10 %
D. R. Barton Tool Co ... dis 20 %
Sandusky ... dis 35 %
Ohio Tool Co ... dis 35 %
Plane Irons, Butcher's ... $5.50 to £ gold
" Buck Bros ... $5.25 to £ gold
" Bailey's Patent ... dis 25&10 %
" Auburn Tool Co.'s ... dis 25 %
" Greenfield Tool Co ... net list
" Defiance ... new list dis 25&10 %
" D. R. Barton Tool Co ... dis 20 %
" Middletown Tool Co ... dis 10 %
" Ohio Tool Co ... dis 10 %
" Spear & Jackson's ... $5.00 to £ gold
" Sandusky Tool Co ... dis 10&10 %
Plow Bits, Greenfield Tool Co ... dis 10 %
Pliers and Nippers.
Button's Patent ... dis 33⅓ %
Hull's Patent Nippers, No. 1, $15; No. 2, $21 ℘ doz, dis 25 %
Gas Pliers ... dis 30&10 %
Eureka Pliers and Nippers ... dis 25 %
P. S. & W. Cast Steel ... dis 20 %
Plumbs and Levels.
Stanley R. & L. Co.'s Pat. Adjustable ... dis 60&10 %
" " " Non-Adjustable ... dis 60&10 %
Chapin's ... dis 60&10 %
Standard Rule Co.'s New Adjustable ... dis 60&10 %
" " Non-Adjustable ... dis 60&10 %
Johnson's Patent Adjustable ... dis 60&10 %
Davis' Patent ... dis 60&10 %
Pocket Levels ... dis 60&10 %
Post Hole and Tree Augers.
Eureka Digger ... ℘ doz $40.00, dis 20 %
Fletcher Post Hole Augers ... ℘ doz 36.00, dis 20 %
Vaughan's Post Hole—
6 in. $23.60; 7, 8 and 9 in. $25 per doz ... dis 20 %
Leed's ... $5.00 each, dis 35 %
Potato Parers, &c.
Bay State ... ℘ doz $12.00 net
"Saratoga" Peeler and Slicer ... ℘ doz 9.00 net
Pulleys.
Judd's Axle ... ℘ doz $0.50, dis 20&10 %
Hot House and Tackle ... dis 60&10 %
Jap'd Screw ... dis 60&10 %
Brass Screw ... dis 60&10 %
Jap'd Side ... dis 60&10 %
" Clothes Line ... dis 60&10 %
Hay Fork ... Solid Eye, $4.50; Swivel, $5.00, dis 40 %
Pumps.
Douglas Cistern, etc ... new list dis
" S. & F ... new list dis
Union Mfg. Co.'s Cistern and Pitcher ... dis 35 %
" " " Rams ... dis 25 %
" " " Garden Engines ... dis 20 %
Punches.
Belt or Drive ... ℘ doz $2.00; 2.25; 2.50, dis 30 %
Spring ... ℘ doz $6.50, dis 25&10 %
" Leach's Patent ... dis 15 %
" Bemis' ... dis 20 %
Solid, Tinners' ... ℘ doz $1.44, dis 20 %

Rail.
Sliding Door, Wrought Brass ... ℘ ℔ 40c net
" Iron, Painted .. ℘ foot 9c, dis 55&10 %
Barn Door, ⅛, ⅝ and ⅞ inch ... dis 65&10 %
" for N. E. Hangers ... dis 65&10 %
Rakes.
Cast Steel ... dis 35 %

8	10	12	14 teeth.
$8.00	9.00	10.00	11.00

Malleable ... dis 40 %

9	10	11	12	13	15 teeth.
$5.00	5.50	5.50	6.00	6.00	6.50

Razor Straps.
Evans' ... dis 40 %
Imitation Emerson ... ℘ doz $2.75, dis 40&10 %
Hunt's ... dis 40&5 %
Chapman ... dis 10 @ 15 %
Torrey's ... dis 20 %
Saunder's ... dis 10 @ 15 %
Rivets.
Iron and Tinned ... dis 40 %
In bulk ... dis 30 %
Copper Rivets and Burs ... dis 10 %

Nos ..	7	8	9	10	11	12	13	14	15
℘ ℔ ..	49c	50c	52c	54c	56c	58c	60c	65c	70c

Rivet Sets ... dis 20 %
Road and Levee Scrapers.
Doty's Revolving ... dis 25 %
Rods.
Stair ... dis 50 %
" American Patent ... dis 33⅓ %
Rollers.
Barn Door ... revised list dis 65&10 %
Novelty ... dis 10 %
Acme (Anti-Friction) ... dis 10 %
Rope. Manufacturers' List of Oct. 3, 1877.
Manila ... ½ inch and larger ℘ ℔ 13½c
" ... ⅜ inch ℘ ℔ 14 c
" ... ¼ and 5-16 inch ℘ ℔ 14½c
" Tar'd Rope ... ℘ ℔ 13 c
" " Lath Yarn ... ℘ ℔ 14½c
" Hay Rope ... ℘ ℔ 13½c
Sisal ... ½ inch and larger ℘ ℔ 11½c
" ... ⅜ inch ℘ ℔ 12 c
" ... ¼ and 5-16 inch ℘ ℔ 12½c
" Hay Rope ... ℘ ℔ 11½c

Rules.	Boxwood.	Ivory.
Chapin's	dis 50&10 %	dis 40&10 %
Stanley	dis 50&10 %	dis 40&10 %
Standard	dis 50&10 %	dis 40&10 %
Stephens'	dis 50&10 %	dis 40&10 %
Willis, Thrall & Son	dis 50&10 %	dis 40&10 %

Sad Irons.
From 4 to 10 lbs ... ℘ ℔ 2¾c net
Sad Iron, Nickel Stand attached ... ℘ ℔ 9c
Self-Heating ... ℘ doz $9.10 @ 9.25 net
" Tailors' ... ℘ doz $19.00 net
Enterprise Patent Cold Handle ... dis 40 %
Combined Fluter and Sad Iron .. per doz $15.00, dis 15 %
Sand Paper.
Baeder & Adamson's Flint, 00 to 1½ .. $4.25 ℘ ream
" " " 2, 2½ & 3 .. 4.75 ℘ ream
" " Assorted 4.25 ℘ ream
" " Star ... 3.25 ℘ ream
" " Emery .. ℘ ream $6.50 @ 11.50
} dis 15 %
New England, same list as B. & A. Flint ... dis 15 %
H. B. & H. Roman Flint " " " ... dis 15&5 %
Sash Cord.
Common ... ℘ ℔ 16 @ 18c net
Patent ... ℘ ℔ 19c net
Silver Lake Russia Flax ... ℘ ℔ 55c net
" White Cotton ... ℘ ℔ 55c net
" Drab Cotton ... ℘ ℔ 60c net
Raw Hide ... dis 25 %
Sash Locks.
Clark's, No. 1, $10.00; No. 2, $8.00 per gross ... dis 33⅓ %
Ferguson's ... dis 33⅓ %
Norwich ... dis 25 %
Walker's ... dis 10 %
New England ... dis 20 %
Hammond's Window Springs ... dis 25 %
Northup Window Springs ... $9.00 per gross, dis 10 %
Sash Weights.—Solid Eyes ... ℘ ℔ 1¼c
Sausage Stuffers or Fillers.
Miles ... ℘ doz $20, dis 30 %
Perry ... ℘ doz, No. 11, $15; No. 10, $21, dis 30 %
Draw Cut No. 4 ... each $30.00, dis 20 %
Enterprise Mfg. Co ... dis 20 %
Silver's ... dis 25 %
Saw Frames ... per gross $18.00, dis 15&10 %
Saw Rods ... $10 list, dis 10&10 %
Saws.
Spear & Jackson's ... $3.50 to £ gold
Disston's Circular ... dis 25 %
" Mill ... dis 30 %
" Cross Cut ... dis 20 %
" Hand, Panel, Rip, &c ... dis 20 %
H. W. Peace's Circulars ... dis 25 %
" Mill, Gang and Mulay ... dis 25 %
" Cross Cut, Wood, Hand, &c ... dis 20 %
E. M. Boynton's Lightning, Cross Cuts ... dis 50&5 %
" One-Man, all lengths ... dis 40&5 %
" Buck Saws (X Bar) .. ℘ doz $15, dis 40&10 %
" Billet Webs ... ℘ doz $10, dis 40&5 %
" Pruning ... dis 40 %
} 5 % cash.
Wheeler & Clemson Mfg. Co.'s Hand ... dis 15 %
" " " Cross-Cut ... dis 30 %
Livingston's Butcher and Kitchen ... dis 20 @ 25 %
" Framed Wood—

Nos ...	101	102	103	104	105
Per doz ..	$10.00	8.50	10.00	7.50	6.25 net

Saw Frames.
White, Vermont ... ℘ doz $1.35, dis 15 %
Red, Polished and Varnished ... ℘ doz $2.00, dis 15 %
Saw Sets.
Boynton's Patent ... dis 40 %
Stillman's Genuine ... ℘ doz $4.25 net
" Imitation ... ℘ doz $3.25, dis 25 %
Common Lever ... per doz $2.00, dis 25 %
Leach's ... No. 0, $8.00; No. 1, $15.00, dis 15 %
Nash's ... No. 1, $8.50; No. 2, $5.50, dis 20&10 %
Hammer, Hotchkiss ... $5.50, dis 10 %
" Bemis & Call's ... dis 20 %
" Aiken's Genuine ... $13.00, dis 33⅓&10 %
" " Imitation ... $7.00, dis 40 %
" Hart's Patent Lever ... dis 20 %
Scales.
Hatch, Counter ... ℘ doz $36, dis 40 %
" Tea ... ℘ doz $15, dis 40 @ 45 %
Union Platform ... $6.00, $7.00, dis 45 %
Turnbull's ... dis 20 @ 25 %
Brown's ... dis 25&5 %
Fairbanks' ... dis 20&5 %
Howe's ... dis 20&5 %
Chatillon's Grocers' ... dis 25 %
" Eureka ... dis 20 %
Universal Family ... dis 25 %
Favorite Family ... dis 25 %
Scale Beams, new list ... dis 25 %
Scrapers.
Box, 1 Handle ... ℘ doz $5.00, dis 10 %
" 2 " ... ℘ doz 6.00, dis 10 %
Defiance Box and Ship ... dis 25&10 %
Foot ... dis 60&10 %
Ship (common) ... per doz $3.00 net
" (Providence Tool Co ... dis 10 %
Screw Drivers.
Hart, Bliven & Mead, new list ... dis 45&10 %
Douglass Mfg. Co ... dis 35&10 %
Disston's ... dis 45 %
Stanley Rule & Level Co., No. 1 ... dis 35&10 %

" " " No. 2 dis 45&10 %

Screws.
Flat H'd Iron list Sept. 1, '75, R. & E. Mfg. Co. dis 60&10 %
" " " Am. Sc. Co. dis 60&10 %
Round Head Iron " dis 50 %
Flat Head Brass, list Sept. 1, '75, Am. Sc. Co. dis 55 %
Round Head Brass, list Sept. 1, '75, Am. Sc. Co. dis 40 %
Brass and Silver Capped dis 40 %
Lag or Common Coach, new list Mch. 1, '76 dis 65 @ 70 %
Coach, Patent Gimlet Point, list Jan. 1, '75 dis 40 @ 50 %
Bed dis 10 %
Japanned, list of Plain Screws dis 45 %
Machine, Flat Head, Iron, Am. Screw Co. dis 10 %
" Round Head, Iron, " " net
Nettlefold's Brass dis 60 @ 60&5 %
Bench, Iron dis 60&10&10 %
" Wood, Beach ℘ doz $3.00, net
" " Hickory dis 20&10 %
Hand dis 25&10 %
Hand Rail, Sargent's dis 60&10 %
" " Humason, Beckley & Co.'s dis 40&5 %
Jack, Bell Bottom dis 20 %

Scythes.
Blood's German Steel, Grass ℘ doz $10.00 }
" Cast, " " ℘ doz 11.00 } dis $1.50
" Silver " " ℘ doz 12.00 } from list
" German " Grain ℘ doz 14.00 }
" Cast " " ℘ doz 15.00 }
" Excelsior and Granger ℘ doz 11.00 }
" Young America 10.50 } dis $1.50
" Silver Clipper 13.00 } from list
Wadsworth's Grass dis 30 %
" Bush dis 20 %
Scythe Snaths dis 20 %

Shears and Scissors.
Cast Steel dis 75 & 10 %
" Iron dis 45 %
Seymour's Straight Trimmers dis 65 %
" Scissors dis 50 %
Pruning ℘ doz $5.50 @ $6.00, net
Barnard's Lamp Trimmers ℘ doz $3.75

Sheaves.
Sliding Door, M. W. & Co., list dis 35&10&2 %
" R. & E. list dis 50&2 %
" Patent Roller dis 25&2 %
" " " Hatfield's dis 50&2 %
" Russell's Anti-Friction dis 50&2 %
Sliding Shutter, R. & E. list dis 50&2 %
" " Sargent's list dis 55&10 %
Moore's Anti-Friction dis 33⅓ %

Shovels and Spades.
Ames dis 30 %
Rowland's dis 50 %
Kimball Shovel Co. dis 20 @ 20&5 %
Old Colony dis 30 %
Middleboro' Shovel Co. dis 30 %
Remington's (Lowman's Patent) dis 30 %
Dunning's Shovels and Scoops dis 20&7½ %

Shovels and Tongs.
Iron and Brass Head, R. & E. list dis 50&2 %
" " Hart's dis 55&10 %
Polished Steel dis 50&2 %

Slates.
Square Frames, Round Cornered, by case dis 70 %
Less than a case dis 65&10 %

Spokes.
North Carolina Handle Co. dis 20 %

Spoke Shaves.
Defiance Metallic new list, dis 25&10 %
Iron dis 33⅓&10 %
Wood dis 30 %
Bailey's dis 25&10 %

Spoke Trimmers.
Bonney's ℘ doz $10.00, dis 40 %
Stearn's ℘ doz $10.00, dis 40 %
Ive's No. 1, $15.00; No. 2, $12.00 ℘ doz, dis 40&10 %
Douglass' ℘ doz $9.00, dis 20&10 %

Spoons.
Tinned Iron dis 10 %
By the case dis 20 %
Basting dis 10 %
Britannia dis 55 @ 60 %
" Boardman's dis 55 %
Derby Silver Co dis 40&5 %
Rogers & Bro., A 1 dis 40&5 %
Reed & Barton dis 40&5 %
Rogers Cutlery Co dis 40&5&5 %
Hall & Elton dis 40&5 %
Holmes, Booth & Haydens dis 40&5 %
German Silver (Hall & Elton) dis 25 %
Tin (P. S. & W.), Teas $1.50 ℘ gross, net
" " Tables $2.50 ℘ gross, net
Tin (Cowles Hdw. Co.) dis 10 %
" " " case lots dis 20 %

Stocks and Dies dis 5&10 %

Stone.
Hindostan Stone ℘ ℔ 6c }
" Ax Stone ℘ ℔ 8c } dis 25&10 %
" Slips ℘ ℔ 10c }
Sand Stone ℘ ℔ 6c, dis 25&10 %
Washita Stone No. 1, ℘ ℔ 30c, net
" No. 2, ℘ ℔ 25c, net
" Slips No. 1, ℘ ℔ 60c, net
Arkansas Stone No. 1, ℘ ℔ $2.00, net
" Slips No. 1 ℘ ℔ $2.50, net
Grindstones, Family, Loring's dis 10 %

Stove Polish.
Joseph Dixon's ℘ gross $6.00, dis 5 %
Gem ℘ gross $4.50, dis 5 %
Gold Medal ℘ gross $6.00, dis 25 %
Rising Sun ℘ gross $5.75, net

Squares.
Steel dis 50 %; full cases, dis 50&10 %
Iron dis 50 %; full cases, dis 50&10 %
Nickel Plated add $2.50 @ $4.00 ℘ doz, net
Try Squares and T Bevels dis 45&10 %
Star Try Squares and Bevels dis 35 %
Disston's Try Squares No. 1 dis 30 %
" " No. 2 dis 45 %
" " Improved, Nos. 1 and 2 dis 30 %
Winterbottom's Try and Miter dis 20&10 %

Tacks, Brads, &c.—List of January 1, 1876.
Tacks, Half Weight, American dis 75&20 }
" Full " " dis 50&20 }
" Half " Swedes dis 60&20 }
" Full " " dis 30&20 } dis 10 % for cash
" Carpet, Am. and Swedes dis 20&20 }
" " Leather Head dis 20 }
" Copper 52c, dis 20 }
Brads, Half Weight dis 50&20 }
Shoe Nails—
4-8ths and longer, 9c; 3½-8ths, 9½c ℘ ℔, dis 20&10 %
Trunk, Clout and Finishing Nails—
⅛ ⅝ ¾ ⅞ 1 1¼ in. and over.
25 20 17 15 13 11c ℘ ℔, dis 20&10 %
Double-Pointed Tacks dis 40&5 %

Tap Borers.
Common and Ring dis 20&10 %
Ives' Tap Borers dis 10&10 %
Enterprise Mfg. Co. dis 20 %

Tapes, Measuring.
American Flask and Cap Co. dis 20 %
Eddy's dis 20 %
Spring Tapes dis 25&10 %

Tea Trays.
American Tea Tray Co dis 15 %

Thermometers.
Tin Case dis 60&5&10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion) dis 20 %
Wood Bottom ℘ doz $12.00, dis 30&10 %
All Iron ℘ doz $10.50, dis 40&5 %
Nashua Lock Co.'s ℘ doz $18.00, dis 50 %

Toe Calks.
Winsted ℘ ℔ 10c. dis 5 @ 7½ %

Tinners' Tools and Machines.
P. S. & W. dis 20 %

Traps.
Game, Newhouse dis 30 %
" Newhouse Pattern dis 60 %
" Blake's Patent dis 40&10 %
Mouse, Wood, Choker ℘ doz holes, 13½c
" Patent Choker (Union Nut Co) ℘ doz holes, 16 @ 18c, net
" Round Wire ℘ doz $1.50, dis 10 %
" Cage " ℘ doz $2.50, dis 10 %
" Patent Self Setting ℘ doz holes, 25c, net
" Catch-em-alive ℘ doz $4.00, net

Trowels.
Lothrops Brick and Plastering dis 10 %
Disston's Brick and Plastering dis 20 %
Peace's Plastering dis 20 %
Clement & Maynard's dis 20 %
Rose's Brick dis 15 %
Brades' Brick gold, dis 20 %
Worrall's Brick and Plastering dis 20 %
Garden dis 25 %

Triers.
Butter and Cheese dis 25 %

Vises.
Solid Box, Trenton 40 to 160 lbs., 12½c, net
" Wilson's { 30 to 160 lbs., 18c, / 160 and over, 22c, } dis 35 %
" Peter Wrights 15½c, gold
Parallel, Parker's dis 20 %
" Wilson's dis 40 %
" Sargent's dis 60&10 %
" Trenton dis 25 %
" Backus and Union dis 25 %
" Merrill's dis 15 %
" Fisher & Norris dis — %
" Buffalo dis 25 %
" Stevens' dis 25 %
" Simpson's Adjustable dis 25 %
Saw Filers, Bonney's ℘ doz $24.00, dis 20&10 %
" Stearn's dis 20&10 %
" Hopkins' ℘ doz $17.50, dis 10 %

Washer Cutters.
Smith's Patent ℘ doz $12.00, dis 10 %
Johnson's ℘ doz $12.00, dis 25 %
Penny's ℘ doz $14.00 and $16.00, dis 20 %
Appleton's ℘ doz $8.00, dis 10 %

Washers.—See Nuts and Washers.

Well Wheels.—Revised list dis 60&10 %

Wire.
Brass and Copper List of Jan. 1, 1877, dis 10 %
Bright and Annealed Nos. 0 @ 18, dis 55 @ 57½ %
" " Nos. 19 @ 26, dis 60 @ 62½ %
" " Nos. 27 @ 36, dis 62½ @ 65 %
Coppered Nos. 0 @ 18, dis 52½ @ 55 %
Galvanized, Nos. 0 to 6 ℘ ℔ 100, dis 30 @ 35 %
" Nos. 7 to 18 market list, dis 30 @ 35 %
Tinned, Nos. 0 to 18 dis 35 @ 40 %
Cast Steel dis 20 @ 25 %
Tinned Broom Wire, Nos. 18 to 25 dis 42½ @ 45 %
Galvanized Telegraph, Nos. 7 to 9 ℘ ℔ 9c
" " Nos. 10 and 11 ℘ ℔ 10c
" " No. 12 ℘ ℔ 10½c
Annealed Fence, Nos. 8 and 9 dis 57½ @ 60 %
" Grape, Nos. 10 to 14 dis 57½ %
Fence Staples ℘ ℔ 7 @ 7½c
Fence Staples, Galvanized ℘ ℔ 9½ @ 10c
Stubs Steel Wire $1.00 to $2 gold
Japanned Barb Fence ℘ ℔ 15c
Galvanized " ℘ ℔ 18c
Steel Music Wire, Nos. 12 to 27 ℘ ℔
Judd's Picture Wire dis 80&20 %
Clothes Line Wire, Galvanized ℘ coil 43 @ 50c, net

Wrenches.
American Adjustable dis 45 %
Baxter's Adjustable "S," New list May 1, '76 dis 20 %
" Diagonal. " " dis 20 %
Collins & Co.'s dis 45 %
Coes Genuine dis 50&5 %
" Pattern (Wrought) dis 50&10 %
" " (Malleable) dis 75&10 %
Girard dis 50&10 %
Hull & Belden's "Climax" dis 25 %
Knight's Patent dis 25 %
Lindsay's " dis 25 %
Taft's Pattern dis 75&10 %
Davis' Patent Duplex new list, dis 25 %
Bemis & Call's Patent Combination dis 20&5 %
" " Merrick's Pattern dis 25&2½ %
" " Briggs' Patent dis 20&5 %
Aiken Pocket (Bright) $8.00, dis 40 %

Wringers. Per doz.
Universal, without Cog Wheels $54.00
" with Cog Wh'ls, No. 2½, small fam'y size 63.00
" " No. 2, usual " 66.00
Crown No. 2 54.00
" No. 2½ 60.00
" No. 66.00
Climax No. 2 67.00
" No. 1½ 78.00
XXX Universal No. 2 67.00
" No. 1½ 78.00
Household, no Cog Wheels 54.00
Sherman, with " 63.00
Eureka, no " 60.00
Reliance, with " 63.00
Novelty, No. 10, with Cog Wheels 63.00
" No. 2, " " 66.00
" No. 22, " " 70.00
Excelsior, No. A, with Folding Bench 84.00
" No. E, for Set Tubs 72.00
Keystone No. 1, Wood Frame, no Gear 50.00
" No. 2, Iron " " 48.00
" No. 2½, Wood " Purchase Gear 60.00
" No. 10, Wood " Common Gear 57.00
Peerless, No. 2 66.00
" No. 3 74.00
New Climax, No. 2 Wood Frame, Purchase Gear 67.00
" " 3 " " " 70.00
" " 4 " " " 78.00

Stamped Tinware.
Common Stamped Ware dis 35 %
Stamped Deep and Retinned Ware dis 45 %

METALS.

IRON.—Duty: Bars, 1 to 1½c. ℘ ℔; Sheet, Band Hoop and Scroll, 1½ to 1¾c. ℘ ℔; provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 ℘ ton; Polished Sheet, 3c. ℘ ℔; Wrought Scrap, $8 ℘ ton; Cast Scrap, $6 per ton. Railroad, 70c. ℘ 100 ℔s. Boiler and Plate, 1½c. ℘ ℔.

Pig Iron—American.
Foundry No. 1 ℘ ton $18.00 @ 19.00
" No. 2 ℘ ton 17.00 @ 18.00
Gray Forge ℘ ton 16.00 @ 17.00

SCOTCH.
Glengarnock ℘ ton @ 25.00
Eglinton ℘ ton 24.00 @
Coltness ℘ ton 26.00 @ 26.50

Rails.
Iron, at mill ℘ ton $33.00 @ 37.00
Steel, " ℘ ton @
Old Rails ℘ ton 18.00 @ 18.50

Scrap.
Wrought Scrap, from yard ℘ ton 22.00 @ 23.00

Bar Iron, from Store.
Common Iron:
⅝ to 2 in. round and square } ℘ ℔ 1.8 @ 1.9c
1 to 6 in. x ⅜ to 1 in. }
Refined Iron:
⅝ to 2 in. round and square } ℘ ℔ 2 @ 2.1c
1 to 6 in. x ⅜ to 1 in. }
1 to 6 in. x ¼ and 5-16 ℘ ℔ 2.2 @ 2.3c
Rods—⅝ and 11-16 round and square ℘ ℔ 2.1 @ 2.2c
Bands—1 to 6x12 to 3-16 ℘ ℔ 2.5 @ 2.6c
Swedish Iron:
Ordinary sizes 5c

Sheet Iron.

	Common American.	R. G. American.
Nos. 10 to 20	℘ ℔ 3 c	4
21 to 24	℘ ℔ 3¼c	4 @ 4¼c
25 to 26	℘ ℔ 3½c	4¼ @ 4½c
27	℘ ℔ 3¾c	4¼ @ 4½c
28	℘ ℔ 4 c	4¾c

Galvanized, 14 to 20, prime, ℘ ℔ 7¼c; 2d qual, ℘ ℔ 6 c
" 21 to 24, " ℘ ℔ 8 c; " ℘ ℔ 6½c
" 25 to 26, " ℘ ℔ 8½c; " ℘ ℔ 7 c
" 27 " ℘ ℔ 9 c; " ℘ ℔ 7½c
" 28 " ℘ ℔ 9½c; " ℘ ℔ 8 c
Patent Planished ℘ ℔ A, 11c; B, 9½c
Russia, Nos. 8 to 16 ℘ ℔ 11½ @ 12c
American Cold Rolled ℘ ℔ 4½c

COPPER.—Duty: Pig, Bar and Ingot, 5c; Old Copper, 4c ℘ ℔; Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.
American Ingot ℘ ℔ 19 @ 19¼c
English " ℘ ℔

SHEATHING, BRAZIERS' COPPER, BOLTS, &C.
Braziers' Copper, ordinary sizes, over 16 oz., ℘ sq. ft. ℘ ℔ 30c
Braziers' Copper, ordinary sizes, 16 oz. and over 12 oz., ℘ sq. ft. ℘ ℔ 32c
Braziers' Copper, 12 oz., ℘ sq. ft. ℘ ℔ 34c
Circles less than 84 in. in diameter ℘ ℔ 33c
Circles 84 in. diameter and over ℘ ℔ 36c
Segment and Pattern Sheets ℘ ℔ 33c
Locomotive Fire Box Sheets ℘ ℔ 30c
Sheathing Copper, over 12 oz. ℘ sq. ft. ℘ ℔ 28c
Bolt Copper ℘ ℔ 30c
Copper Bottoms ℘ ℔ 30c net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the sq. ft.

TINNING.
14x48, by the case ℘ sheet 6c
14x48, less than case ℘ sheet 8c
For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier ℘ ℔ 36c By the case. ℘ ℔ 35c
12 oz. and lighter ℘ ℔ 39c " " ℘ ℔ 38c
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60.
14 and 16 oz. and heavier. ℘ ℔ 38c By the case. ℘ ℔ 37c
(And all sizes not over 20 in. wide.)
30x60.
14 and 16 oz. and heavier ℘ ℔ 40c
12 oz. ℘ ℔ 43c

Brass.
Brown & Sharp's Gauge the Standard for Metal; Old English Gauge the Standard for Wire.
BRASS MANUFACTURERS' PRICE LIST.
January 1, 1877.
Cash prices for Roll and Sheet Brass. For less quantity than 100 ℔s. add 3c ℘ ℔.

HIGH BRASS.
All Nos. not thinner than to No. 28, wider than 2 in., not wider than 14 in. 30c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive 34c
All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 37c
½c. ℘ ℔ advance on each No. above Nos. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass. at 50c
Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c
Printers' Rules 44c
Sheets wider than 30 in. and under 40 in. 45c
" " 40 in. and over 47c
Circular Sheets, in diam. from 4 in. to 14, inclusive 41c
" " over 14 " 20, " 45c
" " " 20 " 30, " 48c
" " " 30 " 40, " 51c
" " " 40 in. 54c

LOW BRASS.
4c ℘ ℔ more than High Brass.
Gilding Metal, 8c ℘ ℔ more than High Brass.
Platers' or Gold Metal { In Bars 46c / Sawed 49c / Planed or Polished 52c

FOR SLITTING.
Metal in width 2 in. to ⅛ in. to No. 28, inclusive, 1c. ℘ ℔ advance.
Metal, in width 2 in to 1 in., thinner than No. 28, 2c. ℘ ℔ advance.
Metal, in width 1 in. to ½ thinner than No. 28, 3c ℘ ℔ advance.
Metal, in width ⅜ in. to ¼, inclusive, not thinner than No. 28, 2c. ℘ ℔ advance.
Metal, in width ⅜ in. to ¼ thinner than No. 28, 5c. ℘ ℔ advance.
Metal, ¼ in. in width and less, 10c. ℘ ℔ advance.
Any of the above widths cut to particular lengths, add 7c. ℘ ℔.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire.
per cent., 12 n., to No. 26	$0.60	$0.85
6 " " "	.68	.95
10 " " "	.84	1.15
15 " " "	1.04	1.40
18 " " "	1.16	1.65

German Silver Sheets over 12 in. wide and weighing more than 16 ℔s., $2.25 ℘ ℔.
Advance 2c. for each additional inch in width above 12 in., and 2c. ℘ ℔ on each No. thinner than Nos. 26 to 36, inclusive.
All German Silver thinner than No. 36 is Platers, at 50c ℘ ℔ additional.
German Silver Scrap one-third less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.34	$0.38	$0.45
No. 21	.35	.39	.46
No. 22	.36	.40	.47
No. 23	.37	.41	.48
No. 24	.39	.43	.50
No. 25	.42	.46	.53
No. 26	.44	.48	.55
No. 27	.46	.50	.57
No. 28	.49	.53	.60
No. 29	.52	.56	.63
No. 30	.55	.59	.69
No. 31	.59	.63	.75
No. 32	.63	.67	.81
No. 33	.67	.71	.90
No. 34	.71	.75	1.00

Spring Wire 2c ℘ ℔ advance.
Flat, Square and Half Round Wire 5c ℘ ℔ advance on Round Wire.
Fancy Wire not less than 10c ℘ ℔ advance of Round Wire.
Brass Rods, No. 8 and smaller not less than 2 feet lengths, 45c.
Wire straightened and cut, smaller than No. 8, and not less than 2 feet lengths, 40c.
Wire and Rods less than 2 feet lengths, special rates.
Twelve cents per ℔ extra for spooling on 1 ℔ spools.

MISCELLANEOUS.
Common Plain Brass Pail Ears $0.41
Brass Door Rail .45

SCRAP.
High Brass Scrap 16c
Low " 18c
Gilding 20c
Turnings, Filings and Chips half the price of Scrap.
Terms—Net cash. Interest to be added after thirty days.

TUBING. ℘ ℔
Plain to No. 20 inclusive, above ¼ in. to 3 in. $0.40
" above 3 in. .50
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain, ¼ inch .78
" 3-16 " 1.10
" ⅛ " 1.60
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing to No. 20.
English, Scotch and Extra Patterns Fancy Tubing to No. 20 .53
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ½ cent for each additional cutting under 2 feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.
Plain .28
Fancy .31
Scotch and Extra Patterns .34

GERMAN SILVER TUBING.
4 Per cent. .85
6 " .95
9 " 1.10
12 " 1.25
15 " 1.40
16 " 1.45
18 " 1.55
20 " 1.56

STEEL.—Duty: Bars, Ingots, Sheets and Coils, valued at 7 cents ℘ ℔., or under, 2¼ cents; over, 7 cents, and not above 11, 3 cents ℘ ℔; over 11, 3½ cents ℘ ℔, and 10 % ad val. Railway Bars, 1¼ cents ℘ ℔. Railway Bars, in part Steel, 1 cent ℘ ℔. Provided, that Metal cemented, cast or made from Iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool 15c
Spring 7c
Homogeneous 12½c
Boiler Plate 8c
Tire 5½c
Machinery (round and square) 9c
File 9c
Sheet 11 @ 16c
Saw Plate, mill and mulay 14 @ 16½c
" gang and X cut 13 @ 14c
" circular as to size 18 @ 30c

Chrome Steel.
Tool ℘ ℔ 14 @ 15c
Tool, extra fine ℘ ℔ 40 @ 75c
Spring ℘ ℔ 8 @ 9c
Machinery ℘ ℔ 8 @ 10c
Gun or Homogeneous ℘ ℔ 12 @ 16c

English Steel.—Payable in gold, net.
" Best Cast ℘ ℔ 17½c
" Extra Cast ℘ ℔ 18½c
" Round Machinery, Cast ℘ ℔ 10¼ @ 11½c
" Swaged, Cast ℘ ℔ 19½c
" Best Double Shear ℘ ℔ 17½c
" Blister, 1st quality ℘ ℔ 14½c
" " 2d quality ℘ ℔ 13c
German Steel, Best ℘ ℔ 11½c
" 2d quality ℘ ℔ 10½c
" 3d quality ℘ ℔ 9½c
Sheet Cast Steel, 1st quality ℘ ℔ 17½c
" " 2d quality ℘ ℔ 14½c
" " 3d quality ℘ ℔ 12½c
File Steel, Flat and ½ Round ℘ ℔ 12½c
" Square and Round ℘ ℔ 12½c
" Mill ℘ ℔ 13½c
" Taper to 4 inch ℘ ℔ 16c
" Taper 3 and 3½ inch ℘ ℔ 18c

ANTIMONY 13½c

LEAD.—Duty: Pig $2 ℘ 100 ℔s; old Lead, 1½c ℘ ℔ Pipe and Sheet, 2¾c ℘ ℔.
Spanish 6⅝ @ 6¾c gold
German Refined 6¾c gold
English 6¾ @ 7c gold
American 5 @ 5¼c
Bar 7c, dis 10 %
Pipe 7½c, dis 10 %
Tin Lined Pipe 15c, dis 10 %
Sheet 8c, dis 10 %
Shot Drop 8¾; Buck, 9¾c, dis 10 %

BABBITT METAL.
N. P. U ℘ ℔ 8½ @ 9c
A 25c; B, 20c; C, 15c; D, 12c ℘ ℔.

TIN.—Duty: Plates, Sheets, Tagger and Terne, 1.1c ℘ ℔; Electro-galvanized Plates, 2c ℘ ℔; Manufactures of, not enumerated, 35 per cent. ad. val. Bars, Block and Pigs free. Banca, subject to duty of 10 per cent.
Banca ℘ ℔ 19 @ 19½ currency
Straits ℘ ℔ 17 @ 17½ currency
English ℘ ℔ 17½ currency

TIN PLATES, CURRENCY PRICES
I C 10x14 / 12x12 / 14x20 } Prime Charcoal $7.00 @ 7.25
I X 10x14 / 12x12 / 14x20 } Prime Charcoal 9.25 @ 9.50
D C 12½x17 " 6.75
D X 12½x17 " 9.00
For each additional X add 2.25

COKE TIN PLATE.

	Best.	2d quality.	Ordinary.
I C 10x14 / I C 12x12 / I C 14x20	$6.75	6.50	6.00 @ 6.25

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	@ $6.50	6.00 @ 6.37½	5.75 @ 6.25
I X 14x20	@ 8.75	....	....
I C 20x28	@ 14.00	13.00 @ 13.50	12.00 @ 13.00
I X 20x28	@ 18.50	....	....
I C 20x200	@ 19.50	....	....

I C 14x20 M. F. Brand $7.37 @ 7.50

SOLDER No. 1, 11 @ 12c; No. 2, 10¾ @ 11c

SPELTER—Duty: In Pigs, Bars and Plates, $1 ℘ 100 ℔s.
Silesian, cash 6¾ @ 7c gold
American, cash 6½ @ 6¾c
Lehigh, on spot 10c

ZINC.—Duty: Pig or Block, $1.50 ℘ 100 ℔s. Sheet, 2½c ℘ ℔.
Sheet, Cask 7¾ @ 8c
" Open 8½c

Paper Stock, Old Metals, &c

(Dealer's Selling Price.)
Canvas linen 4¾ @
" cotton, No. 1 @ 6½
" " No. 2 @ 3½
White linen rags, No. 1 5¼ @
" " No. 2 3¼ @
Colored 2¼ @
Mixed woolens 2½ @ 3¼
Soft woolens 7 @
Gunny bagging 3½ @
Jute Butts 3 @ 3½
Kentucky bagging 5 @
Waste paper and scraps 1 @ 1½
Rope cuttings 1½ @ 3
Kentucky bale rope 4 @ 4½
Oakum junk, No. 1 5½ @ 5¾
" No. 2 @ 4
Grass rope 3½ @
Tarred shaking 2 @
White collar cuttings, all paper 7 @
" " " muslin lined 5 @
" " Envelope 7 @
Hard White Shavings, No. 1 5½ @
Soft " " No. 1 4½ @ 4½
White Shavings, No. 2 4½ @ 4¾
Mixed Shavings, part white 3½ @ 4
Imperfections, No. 2, best folded sheets 4½ @
" No. 1, Heavy Stock 4¼ @
Book Stock 3½ @ 3¾
" " Mixed 4½ @
" " No. 2, light 2 @
Newspaper Stock 2¾ @
Prints 1½ @ 2
Pure Manilas 2¾ @ 2½
Bogus Manilas and Hardwares 1 @
Commons ½ @
Binders' Board Cuttings 1 @
Straw Board Cuttings ⅜ @
Woolen Tailor Clips 13 @ 14
Satinet " 2 @ 2½

Old Metal.
Copper 15 @ 16
Yellow Metal 13 @
Brass, light 9 @
" heavy 10½ @
Heavy Composition 13 @
Old Lead, solid @ 4½
Tea Lead @ 3½
Zinc @ 4¼
Pewter, No. 1 13 @
" No. 2 8 @ 9
Spelter @ 6½
Wrought Iron per ton $19.00
Machinery Iron per ton 13.00
Light Iron per ton 12.50
Stove Plate per ton 11.00
Burnt Iron per ton 5.00

Paints, Oils, &c.

Paints.
Black Lamp, Coach Painters ℘ ℔ 20c
" " Ordinary 6c
" Ivory Drop, fair 12 @ 15c
" " best 23c
Black Paint, in oil kegs, 8c asst'd cans, 11c
Blue, Prussian, fair to best 40 @ 55c
" " " " in oil 25 @ 55c
Blue, Chinese dry 83c
" Ultramarine 18 @ 30c
Brown, Spanish 1½c
" Van Dyke 15c
Carmine, 40 combination price
Green, Chrome 15 @ 23c
" " in oil 14 @ 18 @ 25c
" Paris good, 25c; best, 30c
" " in oil " 30c; " 45c
Mineral Paints 1¼ @ 4c
Orange Mineral 14c
Red Lead, American 8c
" " English 9½c gold
" Venetian (N. C.) dry $1.70 @ $1.75
" " in oil asst'd cans, 11c; kegs, 8c
" Indian dry 12c
Rose Pink 10 @ 13c
Sienna, American, Raw 4c
" Burnt 4½c
" " in oil 10 @ 16 @ 20c
" Raw " 11 @ 15 @ 25c
Umber, Burnt 4 @ 8c
" " in oil 9 @ 12 @ 16c
" Raw 3½ @ 7½c
" " in oil 10 @ 16 @ 18c
Vermillion, Chinese 80c, gold
" English 60c, gold
" Trieste 1.10, gold
" American, Common 18c
White Lead, American, pure dry 8½c
" " " in oil 9c
White, Paris, English, prime in bbls. 2 @ 2½c
Yellow Ochre, French $1.75
" " " in oil asst'd cans, 11c; kegs, 8c
" " Vermont in casks 1½c
Yellow Chrome 17 @ 27c
" " in oil 14 @ 18 @ 25c
Zinc White, American No. 1, dry 6 @ 9c
" " No. 1, in oil 11
" French (Paris) 11
" " in oil 10½ @ 11½

Oils.
Linseed, Raw, in casks and bbls ℘ gal. 59c @ 60c
" Boiled, " 64c @ 65c
Whale, Crude bbl. 62c @ 65c
" Bleached Winter bbl, 70c
" Unbleached bbl, 67c
Sperm, Crude bbl, 1.15 @ 1.20
" Winter unbleached bbl, 1.50
" " bleached bbl, 1.55
Seal, Extra Refined bbl, —
Lard, Pure Winter bbl, 80c
" Spring bbl, 80c
Cotton Seed, Crude bbl, 55c
" Southern Yellow bbl, 67c
" White bbl, —
Neatsfoot, Winter 70c @ $1.10
Natural Lubricating 38c @ 40c

Sundries.
Asphaltum 9c
Benzine ℘ gal. 16c
Chalk ¾c
" Block ¾c
Dryer, Patent, Am'n asst'd cans, 10½c; keg, 9c
" " English " 11c; " 9c
Flocks
Frostings 50c
Glue, White 33 @ 44c
" Sheet 20c
Glaziers' Points, Zinc 8c
Gum, Copal 36c
" Damar 25c
" Shellac, English 45c
" " dark 40c
Litharge, English 9c gold
Pumice Stone, selected Lumps 4 @ 6c
" powdered 2½c
Putty, in bladders 2c
" in bulk 2½c
Rotten Stone, soft, English 8c
Spirits Turpentine 37c
Whiting, Spanish ¾c

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Single Thick.—discount 60 %

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$ 7.50	$ 6.75	$ 6.25	$ 5.75
11 x 14 to 16 x 24	8.50	7.75	7.25	6.50
13 x 22 to 20 x 30	10.75	9.75	8.75	[illegible]
15 x 36 to 24 x 30	12.25	10.75	9.00	
26 x 28 to 24 x 36	13.00	11.50	9.75	
26 x 37 to 26 x 44	14.50	13.25	10.75	
26 x 46 to 30 x 50	15.00	14.00	11.25	
30 x 52 to 30 x 54	16.00	14.50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	

Double Thick.—Discount 60&10 %

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$12.00	$11.00	$10.00	$ 9.25
11 x 14 to 16 x 24	13.75	12.50	11.75	10.50
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 26 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	25.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	25.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

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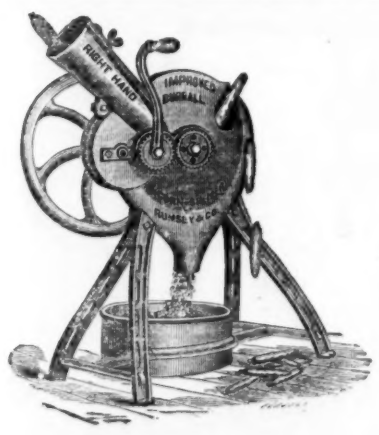

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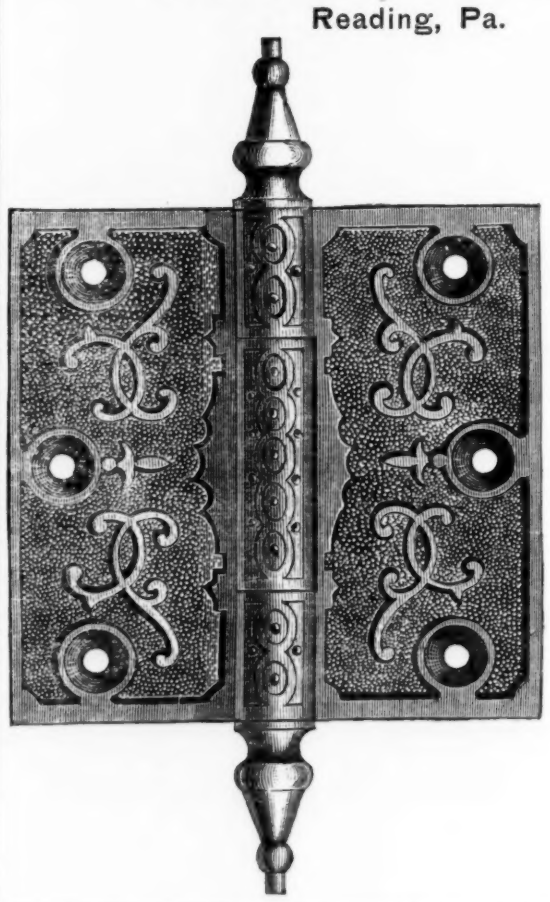

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"FELTER'S PATENT LOCKS,"

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Are the most SECURE and DURABLE ever made.

SECURE

Because they have 40 Brass Tumblers, independent in their action, either one of which will prevent the Lock from being opened unless brought to proper position by the Key.

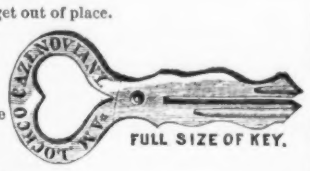
DURABLE

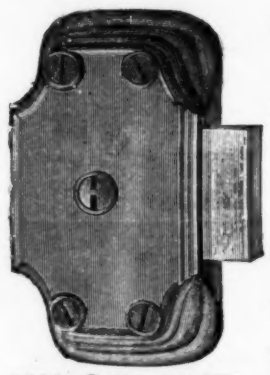
Because we use no Springs to break or get out of place.

THEY HAVE

STERLING METAL KEYS

That will not corrode or wear, and are stronger than steel.





Upright Rim Dead Locks,
Horizontal Rim Night Latches,
Horizontal Rim Tubular Night Latches,
Mortise Night Latches, Plain Fronts,
Mortise Night Latches, Ornamental Bronze Fronts and Knobs,
Brass Chest, Box, Cupboard and Drawer Locks,

Solid Bronze Padlocks.

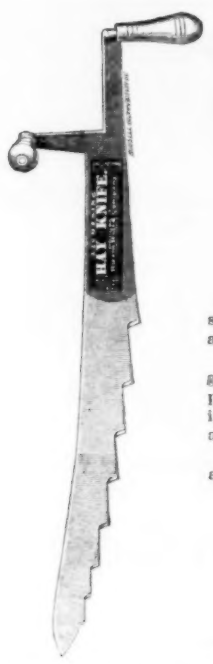
Illustrated Catalogue and Price List sent on application.

All orders should be addressed to

UNION NUT CO., General Agents, 99 Chambers St., N. Y.

LIGHTNING HAY KNIVES,

WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and stack, cutting fine feed from bale, cutting corn stalks for feed, cutting peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giving *universal* satisfaction. A few moments trial will show its merits, and parties once using it are unwilling to do without it. Its sales are fast increasing for export as well as home trade, and *seems destined* to take the place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weights, suitable for shipping by land or water to any part of the world.

Manufactured only by

Hiram Holt & Co.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

CHAMPION **HOG RINGER** RINGS and HOLDER.

Only double Ring ever invented. The only Ring that will effectually keep Hogs from rooting. No sharp points in the nose.

EAGLE BILL **CORN HUSKER** is the best Husker in the market. Farmers say it is the best. Use no other.

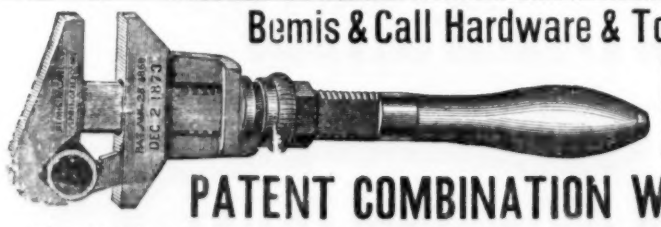
BROWN'S **HOG AND PIG** RINGER and RINGS.

Only single Ring in the market that closes on the outside of the nose. No sharp points in the nose to keep it sore.

Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 15c.

CHAMBERS, BERING & QUINLAN, Exclusive Manufacturers, Decatur, Ills.

Bemis & Call Hardware & Tool Co.



This Wrench can be furnished with Briggs' Pat. Nut or Sleeve.

PATENT COMBINATION WRENCH.

These Wrenches are made from the best of Wrought Iron, with Steel Head and Jaw, Case-hardened throughout, and not only combine all of the superior qualities of our cylinder or Gas Pipe Wrenches, but so all requisite Combinations of a regular Nut Wrench, thus making a Combination which has no equal.

For Circulars and Price List, address,

BEMIS & CALL HARDWARE & TOOL CO. Springfield, Mass.

METALLIC SIEVES.

Protected by 14 patents.

MANN'S PATENT.

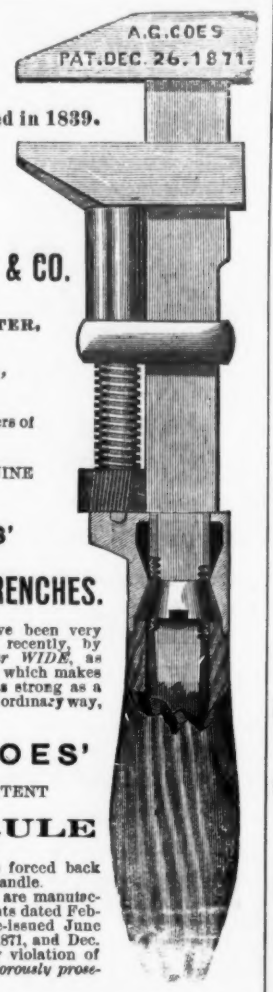
Best Sieve known, Cheap, Neat and Durable.

ADAMS & WESTLAKE MFG. CO.,

CHICAGO, ILLS.

GRANT & CO., Newark, N. J

Cap Rifles & Targets.



Established in 1839.

A. G. COES & CO.

WORCESTER,

Mass.,

Manufacturers of

THE GENUINE

COES'

SCREW WRENCHES.

Our goods have been very much improved recently, by making the *Bar WIDE*, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

A. G. COES'

NEW PATENT

FERRULE

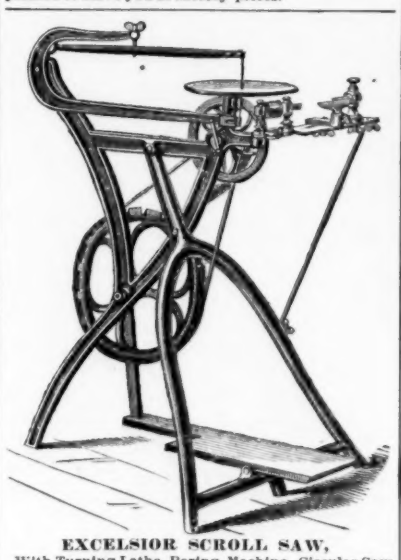
Which cannot be forced back into the handle.

☞ Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 29, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be *vigorously prosecuted.*

We call particular attention to our new Patent Ferrule, with its supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

A. G. COES & CO.

Our Agents, GRAHAM & HAINES, 113 Chambers St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.



EXCELSIOR SCROLL SAW,

With Turning Lathe, Boring Machine, Circular Saw and Tilting Table for Inlaying Work. The most complete amateur machine yet offered. The Scroll Saw Turning Lathe, Circular Saw or Boring Machine may be used at one time. The following is a partial description of the machine: Length of sweep, 19 in.; stroke, 2 in.; speed, 900 revolutions per minute; lathe bed, 16 and 22 in.; swing of lathe, 3 in.; revolution, about 6000 per minute. Price of Machine, with Scroll Saw, Inlaying Table, Boring Machine, $8.00; above with Lathe and Tools, $10.00. Send for circular giving description of Machine and list of Designs and Amateur Supplies.

EXCELSIOR SCROLL SAW CO., New Bedford, Mass.

LENNOX & PAINE

Manufacturers of

Iron, Brass & Steel Work.

Particular attention paid to **Model Making.**

Gear cutting for CLOCK WORKS, &c., a specialty.

55 Frankfort St., Cleveland, O.

COBB & DREW,

Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets: Common and Swedes Iron, Leathered, Carpet, Lace and Gimp Tacks; Finishing, Hungarian, Trunk Clout and Clasp Box Nails, &c. Rivets made to Order.

NEW YORK AGENCY

George C. Grundy,

HARDWARE.

165 Greenwich Street.

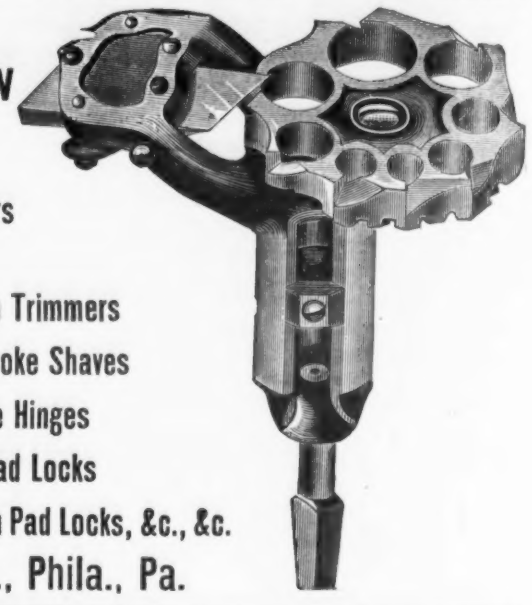
Agent for the Philadelphia Star Carriage and Tire Bolts.

Lloyd, Supplee & Walton,

HARDWARE FACTORS.

MANUFACTURERS OF

Bonney's Hollow AUGERS.



Stearn's Hollow Augers and Saw Vises

Bonney's Spoke Trimmers

Double Edge Spoke Shaves

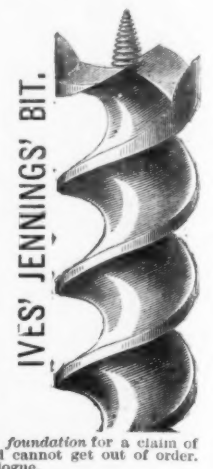
Adjustable Gate Hinges

Scandinavian Pad Locks

Flat Key Brass and Iron Pad Locks, &c., &c.

625 Market St., Phila., Pa.

WM. A. IVES & CO., New Haven, Ct.

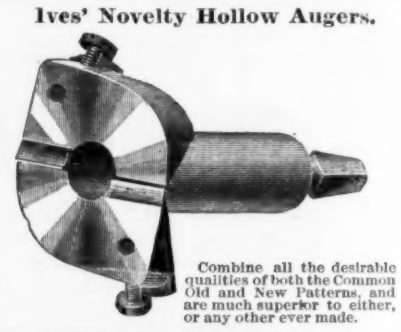


The internal arrangement of these Braces has been so changed as to avoid any *foundation* for a claim of infringement. Manufactured under our own patents, they are strong, simple, and cannot get out of order. We guarantee the goods and those who buy them. Numbers same as in our Catalogue.

Ives' Expansive Hollow Augers.

Made from Malleable Iron. This Auger is light and comely. It cuts any size, from ⅜ to 1⅝. No other similar tool has so great a range or works as well.

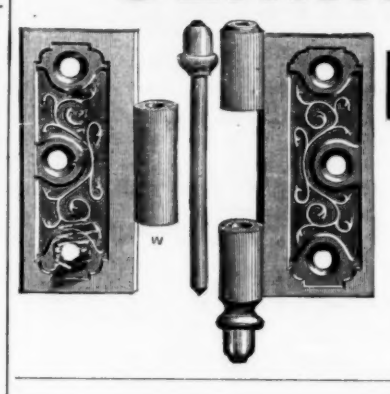
Ives' Novelty Hollow Augers.



Combine all the desirable qualities of both the Common Old and New Patterns, and are much superior to either, or any other ever made.

CLARK & CO.,

MANUFACTURERS OF



BUILDERS' HARDWARE.

426 & 428 Niagara Street,

BUFFALO, N. Y.

TENNIS & WILSON, Agents,

81 Beekman St., New York.

Send for Catalogue and Price List.

WROUGHT IRON BLOCKS

FOR ROPE OR CHAIN.

All sizes constantly on hand for Rope from ¼ in. to 2½ diam., and for Chain 3-16 to ¾ in. diam.

OPEN MOUTH PUNCH.

McCOY & CO., 134 & 136 Duane Street, New York.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 10 per cent. per annum.

Anvils.
Peter Wright's, ₱ ℔, gold.....10½c
over 250 lbs.....11c. gold, net
Wilkinson's, ₱ ℔. gold.....11c. net
Eagle (American).....9 cents per lb—dis 20%

Apple Parers.—
Reading No. 72.....per doz $ 5 50 net
" " 75....." 6 25 net
" " 76....." 7 00 net
" " 77....." 7 50 net
Peach Parers....." 10 00 net
Little Favorite, corer and slicer....." 7 50 net
Lots of 10 to 25 dozen special price.

Axes.—
Mann's Red Warrior .....Per doz. $8 50 @ 9 00 net
Red Indian....." 8 50 @ 9 00 net
Red Chieftain, beveiled....." 9 00 @ 10 00 net
Crown Prince....." 9 50 @ 10 50 net

Augers and Auger Bits.—
Bates' Nut Augers.....dis 40&10 @ 50 %
Cook's Augers.....dis 50 @ 55&5 %
Watrous Ship Augers.....dis 15 %
Benjamin Pierce Auger Bitts.....dis 40 %
Griswold Auger Bits.....dis 40&10 @ 50 %
Cook's " " .....dis 50 @ 50&5 %
Jennings' " " .....dis 10 %
Bonner's Pat. Hol. Augers, list $48 ₱ doz...dis 25&10 %
Stearns' Pat. Hol. Augers " $48 " ...dis 25&10 %

Balances.—
Light and "Common".....dis 25&10 %
All other Spring Balances.....dis 25 %

Bells.—
Bevin Bros. Mfg. Co. Light Hand Bells.....dis 70 @ 75 %
Swiss Pattern Hand Bells.....dis 50 @ 5?&10 %
Connell's Door Bells.....dis 50 @ 50&10 %
Gt. Western & Kentucky Cow, new list.....dis 50 %

Boring Machines —
Upright, with augers, $5 00; without augers..$3 00 net
Angular, " 6 00; " 4 00 net

Bolts.—Eastern Carriage Bolts .....dis 75&37 ½—cash
Philadelphia " " .....dis 60&10 @ 60&20 %
Stanley, Wrought Shutter.....dis 50&10 @ 60 %

Braces.—Barber's.....dis 40&5 %
Packus.....dis 50 @ 50&10 %
Spofford.....dis 50 %
American Ball.....dis 25&10 %

Butts.—Cast Fast Joint. Narrow.....dis 50&10 %
" " Broad.....dis 60&10 %
Cast Loose Joint.....dis 65&10 %
" Acorn, Loose Pin.....dis 65&10 %
" Acorn " Jap'd.....dis 67½&10 %
" Mayer's .....dis 65&10 %
" Parliament.....dis 60&10 %
Wrought Loose Pin.....dis 40&10 %
" Table Hinges and Back Flaps.....dis 45&10 %
" Narrow.....dis 40&10 %
" Loose Joint.....dis 40&10 %

Blind Butts.
Parker.....dis 60 @ 60&10 %
Clark.....dis 60 %
Shepard.....dis 60 %
Lull & Porter.....dis 65 @ 65&10 %
Huffer's.....dis 40 %

Chains.—German Halter and Coil.....dis 30&5 % gold
Galvanized Pump.....₱ ℔ 10½c net
Best Proof Coil Chain—(English).
₱ ℔.....11½ 8¼ 7¾ 7⅛ 8¼ 8¼ 7c gold
3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ in.

Chisels.—Socket Framing.....dis 65, 5&10 %
Socket Firmer.....dis 65, 5&10 %
Butcher's.....$5 00 to £ gold

Casters.—Bed.....dis 50&10 %
Plate.....dis 50&10 %

Coffee Mills.—Box and Side.....dis 25 %
Enterprise.....dis 20 %

Cutlery.—Walden Pocket.....dis 30 @ 35 %
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net

Drawing Knives.—
Hart Mfg. Co.'s.....dis 65, 5&10 %
Adjustable Handle.....dis 20 %

Fry Pans.
Tinned.....dis 50&10 @ 60 %
₱ doz..$3 50 4 00 4 50 5 00 5 50 6 50 7 50 9 00 10 00
No..... 0 1 2 3 4 5 6 8
Burnished.....dis 50&10 @ 60 %
₱ doz..$3 00 3 75 4 25 4 75 5 25 6 00 7 00 8 00 9 00
No..... 0 1 2 3 4 5 6 7 8

Files.
Nicholson.....new list, dis 30 %
Disston.....dis 30 %
Butcher's.....$1 50 @ $4 75 £ gold
Spencer.....4 50 @ 4 75 £ gold

Fluting Machines.
Imperial—4½ in. roll.....each $2 50 net
" —6 in. roll.....3 00 net
Crown—4½ in. roll.....each 2 50 net
" —6 in. roll.....3 00 net
" —8 in. roll.....4 25 net
Eagle—3½ in. roll.....per doz. $18 00 net
" —5½ in. roll.....per doz. 24 00 net
Geneva Fluter.....per doz. 15 00 net
Favorite com. Fluter & Sad-Iron..₱ doz $15 00 dis 15 %

Hammers.
Yerkes & Plumb's.....dis 25 @ 30 %
Hammond & Son's.....dis 25 @ 30 %

Hatchets.
Yerkes & Plumb.....dis 25 @ 30 %
Hammond.....dis 25 @ 30 %
Hunt.....dis 25 %

Hinges.
Strap and T.....dis 60 @ 60&5 %

Horse Nails.

Nos.	5	6	7	8	9	10
Ausable	30	27	25	24	23	22
" Pt'd & Polished	31	28	26	25	24	23
Globe	31	28	26	25	24	23
Clinton Horse Nails	20	18	17	16	15	
" Polished and Pointed	21	19	18	17	16	

Southern, all sizes.....₱ ℔ 14c. net
Discount on Ausable & Globe, 20 %; Clinton, 15 %

Locks and Knobs.
Branford.....new list, dis 6?&10&2 % cash
Gaylord Cabinet.....dis 25&2 % cash
United States Lock Co.....dis 35 %
American Padlocks.....dis 33⅓, 5&2 % cash
Scandinavian Pad Locks.
₱ doz...$7 50 9 00 10 50 12 00 15 00 18 00 22 00 } 60&10
No..... 57 58 59 60 61 62 64 }
₱ doz.....$27 00 35 00 40 00 } 60
No..... 64 65 66 }

Lanterns.—
Square Candle and Oil.....₱ doz. $2 75 @ 3 00
Tubular.....No. 0, $10 50; No. 1, 12 50 ₱ doz. net
Guards, 50 cents extra per doz., net.

Mattocks.—
Long and Short Cutter.....₱ doz. $9 00 @ 9 50 net
Pennsylvania Pattern.....9 50 @ 10 00 net

Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 62½&10 %
Lincoln's " .....dis 62½&10 %
Landers, Frary & Clark's Petroleum.....dis 20&10 %
Brass Liquor Cocks.....dis 5 %
Cork Lined " .....dis 65 @ 65&10 %

Meat Cutters.—Dixon's.....dis 25 @ 30 %
Woodruff.....dis 25 @ 30 %
Stowe.....dis 25 @ 30 %
Hale's.....new list, dis 50&2 %
American.....dis 25 %
Stuffers.....dis 25 @ 30 %
Enterprise Stuffers.....dis 20 %

Planes.—Sandusky.....dis 40 %
Ogonts.....dis 40&10 %
Bailey.....dis 25&10 %

Plane Irons.—Sandusky.....dis 10 %
Butcher's.....gold & $5 00

Plumbs and Levels.
Stanley's Adjustable.....dis 60&10 %
" Non-Adjustable.....dis 60&10 %

Picks.—Philadelphia.....dis 10 %
Hunt's.....dis 25 %

Rules—Stanley Boxwood.....dis 50&10 %
Stanley Ivory.....dis 40&10 %

Steelyards.—Hart's Pattern.....dis 60&10 %
₱ doz.....$14 50 17 75 21 00 26 50 31 00 35 50
Lbs..... 50 100 150 200 250 300
American Pattern.....dis 25 @ 25&10 %
₱ doz.....$5 50 7 00 9 00 10 00 11 00 12 00
Lbs..... 50 100 150 200 25 300
English Pattern.....dis 25 @ 25 %
₱ doz.....$7 00 8 67 10 67 12 67 14 67 16 67
Lbs..... 50 100 150 200 250 300

Squares.—
Steel and Iron.....dis 30 %; full case, dis 50&10 %
Try Squares, Stanley.....dis 45&10 %
Disston's Try Squares.....dis 45 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₱ doz. $9 00 net
Clipper No. 10, Bronzed Blade Boxed and Sharpened.....₱ doz. $8 50 net
Clipper No. 5, Painted Red, Boxed and Sharpened.....₱ doz $8 25 net

Saws.—Disston's Hand, Panel and Rip.....dis 30 %
Disston's Circular.....dis 30 %
" Cross-Cut No. 7, Plain Tooth..₱ ft., 45c net
" " Patent Tooth.....₱ ft., 45c. net
" " Champion Tooth....₱ ft., 35c. net

Shovels and Spades.
Rowland.....dis 50&5 %
Oliver Ames & Sons, new list.....dis 30 %

Sad Irons.—4 to 10 lbs.....₱ ℔. 2¼ @ 2¾c
Mrs. Potts' Patent.....dis 30 @ 40 %

Stone.—Arkansas Oil Stone.....₱ ℔ $1 35 net
Washita Extra....." 36c net
" No. 1....." 30c net
" 2....." 2?c net
" Slips....." 6 c net
" Axe....." 25c net
Turkey Oil Stone No. 1....." 16½c net
" " 2....." 10c net
" Axe Stone....." 25c net
Hindostan Oil Stone No. 1.....₱ ℔ 4 @ 4½c net
" Axe Stone....." 5 @ 5½c net

Screws.
United States and others in Combination....dis 60&10 %

Spoons.—
Plated.....dis 40 @ 40&5 %
German Silver.....dis 25 %
Britannia, Boardmans.....dis 50&10 %
" Parkers.....dis 50&10 %
Tinned.....dis 10 %
" by case.....dis 20 %

Springs.—Torrey.....₱ doz $2 00 @ 2 10 net
Philadelphia .....5 in., $5 00; 6 in., $7 00 ₱ doz. dis 25 %
Chatfield.....No. 1, $3 50; 2, $4 00; 3, $6 00 ₱ doz. net
Gem Coil No. 1, Large Jap'd.....₱ doz $3 50 } dis
" " No. 2, Medium Jap'd.....2 50 }
" " No. 3, Small " .....2 00 }

Stocks and Dies......dis 10&5 %

Stove Polish.—Gem.....₱ gross, $4 25 @ 4 50 net
Dixon.....$5 75 @ 6 00 net
Onyx.....$4 00 @ 4 25 net

Tacks, Brads, &c.
Tacks, Half Weight American ....dis 75&20 %
" Full " ....dis 50&20 %
" Half " Swedes.....dis 65&20 %
" Full " " .....dis 30&20 % } dis 10 %
" Carpet, Am. and Swedes ..dis 20&20 % } cash
" Leather Head.....dis 20 %
" Copper.....₱ ℔ 52c., dis 20 %
Brads, Half Weight.....dis 50&20 %
Shoe Nails—
4-8 and larger, 9c; 3½-8, 9½c ₱ ℔. dis 20&10 %
Trunk, Clout and Finishing Nails—
½ ⅝ ¾ ⅞ 1 1¼ and over
25, 20, 17, 15, 13, 11c ₱ ℔, dis 20&10%
Double Pointed Tacks.....dis 40&5 %

Traps.
Genuine Oneida—Newhouse.....dis 30 %
Im. Oneida—Newhouse list (1st qual.).....dis 60 %

Vises.—Solid Box, Trenton.....₱ ℔ 11½ @ 12½c net

Wrenches.—
Girard (Coe's Pattern).....dis 50&10 %, case 50, 10&5 %
Agricultural—
₱ doz 10 in., $3 60; 12 in., $5 40 net; case dis 5 %
Coes' Genuine.....dis 50&5 %
" Pat. Wrot Bar .....dis 60 @ 60&10 %
" " Mail " .....dis 75 %
Taft's " Wrot " .....dis 75 @ 75&10 %
Phila. Tool Co., Duplex.....dis 25 %

Wire.—
Bright or Ann'd, No. 0 to 18.....dis 52½ @ 55 %
" " No. 19 to 26.....dis 57½ @ 60 %
" " No. 27 to 36 .....dis 60 @ 62½ %
Coppered 0 to 18.....dis 47½ @ 50 %
Tinned Broom Wire.....dis 42½ @ 45 %
Galvanized, No. 7 to 18.....dis 22½ @ 25 %

Wringers.—Novelty No. 10.....₱ doz. $63 00 net
Novelty No. 2.....66 00 net
Universal, No. 2½.....63 00
" No 2.....66 00

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.
Sept. 1, 1877.

Apple Parers—Bay State.....per doz $12 00
Faultless Turn Table.....7 50
Lightning.....7 50
Peach Parers.....7 50
Potatoe Parers.....12 00
Climax Corer and Slicer.....6 00
Bells, Cow—Law's Genuine.....dis 50 %
Braces—Bit, Spofford's Patent.....dis 50 %
Brass—Sheets.....list net
Boards—Stove, Brooks' Pat..dis 40 % 4 mos.; 50&5 % 30 dys
Brick—Bath (box of 2 doz) Best English.....dis 50 %
Can Openers—Sprague's.....dis 25 %
Cases—Parlor Coal Hod.....dis 35&10 %
Chisels—Firmer Socket.....dis 60, 10&10 %
Framing Socket.....dis 60, 10&10 %
Corner Socket Chisels.....dis 60, 10&10 %
Slick's Carpenters'.....dis 60, 10&10 %
Castings—Malleable.....dis 60, 10&10 %
Cocks—Globe and Bibb.....₱ ℔ 7½c
Cutters—Meat, "Hales".....dis 45 %
Egg Beaters—"Dover".....50%
"Family".....per doz $4 00
Elbows—Corrugated.....per doz $2 75
Adjustable.....dis 20 %
Columbus.....dis 20 %
Files—Matchless Bros.....dis 25 %
Fluters—Geneva Hand.....dis 50&10 %
Freezers, Ice Cream—"Champion".....₱ doz. $15 00
Hinges, Gate—Shepard's.....dis 33⅓&5 %
Hinges—Window Blind—
Shepard's and Standard.....dis 45 %
Hogs, Coal—Plain, Black and Galvan'd...new list dis 25 %
Funnel, Black and Galvanized.....dis 25 %
Fancy and Helmet.....dis 25 %
Sad Irons.....9c
Kettles—Brass.....₱ ℔. 45c
Copper, "Hand Made".....
Enameled.....35c.
Knives, Drawing—Oval No. 1.....dis 60 %
Razor Blade.....dis 60, 10&10 %
Lanterns, Tubular—with guard.....dis 60&10 %
Without guard.....$10 50
Mills, Coffee—Box and Side, common.....10 00
Box Union and Eagle.....dis 25 %
Cut Nails, "Chesapeake," list.....dis 30 %
Horse, Ausable.....$2 50
No. 5 6 7 8 9 10
30 27 25 24 23 22c
Pointed & Polished.....add 1c ₱ ℔
" " 1000 lbs.....dis 30 %
Paint—White Lead, U. S. Gov't.....₱ ℔ 9c
Pans—Dripping.....₱ ℔ 9c
Frying.....dis 50 %
Rivets—Iron, Black and Tinned.....dis 40 %
Screws—"American screw Co —
Flat Head, Iron.....dis 60&10 %
Flat Head, Brass.....dis 55 %
Sieves—Wood, Hoop Iron.....$1 20
Tinned.....1 50
Sifters—Ash.....$9 00 @ $12 00
Skates and Straps—White's.....dis 30 %
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
S. S. & Co., Kitchen.....dis 35 %
Plated Rogers' A No. 1.....dis 40&5 %
Britannia.....dis 55 %
G. S. Hall, Elton & Co.....dis 25&5 %
Scales—Buffalo Scale Works.....dis 15 %
Fairbanks.....dis 25 %
Stove Polish—Gem.....₱ gross, $4 50
" Dixon's.....6 00
Palace.....₱ gross, $3 00 bulk, per ℔.. 9c
Rising Sun.....₱ gross, $5 75
Squeezers—Lemon, Porcelain.....₱ doz., $5 40
Tacks—Half Weight Am. Iron.....dis 75&20 %
Tea Trays.....dis. 15 %
Thermometers—Tin Case.....dis 50, 10&10 %
Tools—Tinmens'.....dis 10 %
Vases—Palace Coal.....dis 25 %
Vises—
Parallel, Buffalo.....dis 30 %
Wire—Brass and Copper.....list net
Wire—Bessemer Steel.....dis 25 %
Wringers—Novelty.....No. 2, $36 00; No. 10, $63 00
Tin Plates.—Add for each X.....2 50
10x14, IC, Charcoal.... ₱ 225 | 14x20 I. terne.....46 75
12x12, " .... 7 25 | 20x28 C. " 14 50
12½x17, " .... 6 75 | 20x28 X. " 19 50
14x20, " .... 6 75 |
Pig Tin—Straits.....20c @ 21c
Bar Tin.....22c
Solder—S. S. & Co. No. 1.....13c
S. S. & Co. Extra.....15c
Sheet Zinc—
"Lasalle".....570 100 ℔ casks
$9 00 8 30 ₱ 100 ℔s
Sheets.....$8 00
Babbitt Metal......₱ ℔ 12c
Iron Wire—Bright and Annealed.....dis 52½ %
Coppered.....dis 47½ %
Tinned.....dis 35 %

Nos.	20	21	22	
Tinned Broom,	20c	21c	21c	dis 40 %

Copper—Sheathing 14 @ 18 oz.....₱ ℔. 29c
Planished.....₱ ℔ 36c
" Boiler Sizes.....₱ ℔ 38c
Bottoms.....₱ ℔ 30c
Bolts.....₱ ℔ 30 @ 32c
Brazers' Sheets.....₱ ℔ 30 @ 32c
Sheet Iron.
14 Common.....$3 05
24 Common.....3 25
26 Common.....3 45
24 W. D. Wood & Co., Smooth Finish.....4 25

	A.	B.
Planished	11c	9½c

Gen. Russia, No. 1 stained.....12c
" clean.....12½c
Galvanized.....dis 35 %
Tin Ware.
Deep Stamped Plain and Retinned.....45 %
Coin.....dis 35 %
Japanned " " .....dis 35 %

CHICAGO.

(The Chicago Stamping Co., 72, 74 & 76 Lake St.)
Sept. 19, 1877.

Tin Plate.—

10x14, I.C.Ch'l. Good.$		14x20. I.X.X. Ch'l Best.	12 75
10x14, IC, " Best,	7 75	14x20. I.X.X.X. " "	15 25
10x14 I.X. " "	10 25	D.C. 100 Plate " "	7 75
12x12, IC, " "	7 75	D.X. " "	10 25
12x12, I.X. " "	10 25	D.X.X. " "	12 75
14x20, IC, " "	7 75	D.X.X.X. " "	15 25
14x20, I.X. " "	10 25	IC, Roofing, " "	7 25
20x28, IC, Charcoal Roofing, Good		IX, " "	9 75
20x28, IC, " Best			14 50
20x28, IX, " "			15 00
20x28, IX, " "			19 50
10x14, IC, Coke Plates			6 75
14x20, IC, "			7 25
10x20, IC, "			11 00

Block Tin.—

Large rigs	20c	Bars	22c
Small	21c		

Zinc.—sheet, 500 to 1000 ℔. Casks.....7½c
Loose Sheets.....8 c
Slab Zinc or Spelter.....7 c
Copper.—Bottoms.....32c
Sheathing.....30c
Planished.....37c
" Boiler length.....39c
Bolt.....35c
Braziers' Sheets.—
30x60, 6 to 7 lbs...₱ ℔ 6c | 30x60, 10 to 12 lbs...₱ ℔ 32c
30x60, 8 to 9 lbs..." 34c | 30x60, 15 to 100 lbs." c
Solder.—F. S. & Co.'s make
Best Fine.....16c
No. 1.....15c
Roofing.....13c
Brazers or Sucker Solder.....85c
Antimony.....18c
Babbit Metal—F. S. & Co.'s.....16c
No. 2.....14c

Sheet Iron.—

	Common.	Smooth. Com.	Smooth Charcoal.	Smooth Juniata
No. 24	3·20c	4·1c	5 c	8 c
25 & 26	3·40c	4·6c	6½c	8¼c
27	3·60c	4·8c	6¾c	8½c

Galvanized Iron.—

No. 16 to 20	12c	No. 27	15c
21 to 24	13c	28	16c
25 & 26	14c		

Russia Iron.—
Perfect.....12½c | No. 1 Stained.....12½c
In Sheets, 1c. higher.

American Russia.—
A.....11c | B.....9½c
In sheets, 1c higher.

Lead.—
Pig.....7 c | Lead Pipe, in full coils 8¼
Bar.....7¾ | Lead Pipe, when cut.. 9
Sheet Lead.....9

Wire—Bright.....dis 47 %
Coppered.....dis 40 %

PITTSBURGH.

The following are the Card rates, f. o. b. in Pittsburgh of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent.
Merchant Bar Iron.....3c rates net
Flat Rail (1¼x¾), punched and coun'sunk..3¼c ₱ ℔ net
Iron Wedges.....3¼c ₱ ℔ net
Norway Nail Rods, Vasa.....7 c ₱ ℔ net
Iron Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)....4 c ₱ ℔ net
Beetle Rings.....5¾c ₱ ℔ net
Fence Pickets—
⅜ r'nd, bent to shape, 35c ₱ ft. of fence, less 15 % off net
Discount off Standard List.
Carriage and Tire Bolts, $500 worth purchased in six months, ending July and Jan. 1....75, 5&3 % off net
Stove Bolts.....40 % off net
Elevator Bolts.....30 % off net
Machine and Square Head Bolts.....60 % off net
Coach and Lag Screws.....60 % off net
Bolt Ends.....60 % off net
Pat. Hot Pressed Sq. and Hex. Nuts.....7½c ₱ ℔ off. net
Washers, all made from new band iron..7½c ₱ ℔ off net
Nuts and Washers in 25 lb. boxes, ½c ₱ ℔ ex. Nuts and Washers in lots less than one keg each size, ½c ₱ ℔ ex. Nuts and Washers in 5 lb. boxes, 1c. ₱ ℔ ex.
Standard Caps, for Plows.....4½c. ₱ ℔ net
Iron Harrow Teeth, in lots of 1 ton or more, packed in 200 lb. boxes, 1 in. diam. 2¾c ₱ ℔ net; ⅞ in. diam. 2¾c ₱ ℔ net; ¾ in. diam. 3c ₱ ℔ net.
Pat. Headed Harrow Teeth, packed in boxes, ½c ₱ ℔ ex.
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 4½c ₱ ℔ net; 9-16 in. diam. 5½c ₱ ℔ net; ½ in. diam. 6½c ₱ ℔ net. ½c ₱ ℔ extra when less than 1 keg of each size is ordered.
Screw Hook and Eye Hinges, with Pat. Hooks, ¾ to 1 in. diam., 7c ₱ ℔ net; ⅝ in. diam., 8c ₱ ℔ net; ½ in. diam., 10c ₱ ℔ net.
Screw and Strap Hinges—all sizes under 28 in. long have Pat. Hooks, 14 to 36 in. long, 3 4-10c ₱ ℔ net; 6, 8, 10 and 12 in. long, 4 9-10c ₱ ℔ net.
Strap & T Hinges.....60&10 % off net
Hereafter we will not make any allowances for freight on Strap and T Hinges; our price on them is F. O. B. in Pittsburgh.
Screw Hitching Rings, light, with ¼ ring, No. 1, $4 00 ₱ 100 net; heavy, with 5-16 ring, No. 2, $4 50 ₱ 100 net.
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long.....₱ ℔ 3½c net
1 to 2 in. diam. from 4 to 8 ft. long.....3¾c net
1 to 2 in. diam. from 1½ to 4 ft. long.....3¾c net
⅝, ¾ and ⅞ in. diam. over 4 ft. long.....4 c net
⅝, ¾ and ⅞ in. diam. from 1½ to 4 ft. long.....4¼c net
Bridge bolts with upset ends.....¼c. ₱ ℔ extra
Wrought iron plates, punched.....4¼c. ₱ ℔ net
Cast Iron Washers.....₱ ℔ 3½c net
Grass Rods.....4¼c ₱ ℔ net
Heel Bolts.....3¾c ₱ ℔ net
Duck Neat Tuyere Irons.....$13 50 ₱ doz net
Wrought Iron Repair Links.....15 % off net
" Rings.....50 % off net
" Lap Rings.....33⅓ % off net

WAGON HARDWARE.

Single Trees, Neck Yokes and Double Trees, made from best selected Hickory, and ironed complete, in the most approved patterns.
No. 1 Southern Plow Single Tree, ironed complete, Irons all Wrought.....each, 38c net
No. 2 Western Plow Single Tree, Ironed complete Irons all Wrought.....each, 50c net
No. 3 Wagon Single Tree, Ironed complete, Irons all Wrought, except Malleable Ferrule.....each, 60c net
No. 4 Wagon Single Tree, Ironed complete, Irons all Wrought; Improved End Pieces riveted on; one side acts as a wear iron for wheel to rub against.....each, 60c net
Neck Yoke, Ironed complete, Irons all Wt., except End Ferrules, with Wt. Iron Rings.each, 70c net
Southern Plow Double Tree, ironed complete, irons all wrought.....each, 60c net
Wagon Box Strap Bolts—For Orders of 50 Set, 45 % dis.

10 in. long by 7-16 at Screw End, ₱ set of 8 bolts					45c
12	"	⅜	"	" 8 "	55c
10	"	9-16	"	" 8 "	65c
12	"	9-16	"	" 8 "	70c
14	"	9-16	"	" 8 "	80c
10	"	⅝	"	" 8 "	80c
12	"	⅝	"	" 8 "	80c
14	"	⅝	"	" 8 "	90c
16	"	⅝	"	" 8 "	1·00
18	"	⅝	"	" 8 "	1·10
20	"	⅝	"	" 8 "	1·20

5c ₱ set for each additional inch over 14 in. All lengths made.
In ordering Box Strap Bolts please give diameter at Screw End.
Wrought Iron Bolster Plates, 2¾ in. wide, ₱ set.....45c
" " " 3 " " " 50c
" " " 3¼ " " 55c
" " " 3½ " " 60c
Wrought Hammer Straps, heavy pattern, each.....13 c
" " " light " each.....12 c
" Rub Irons, each.....9 c
Double and Single Tree Clips, figure 1, each.....8 c
" " " " 2, each.....9 c
" " " " 3, each.....11 c
Pole Caps, each.....20c
Strap Bolts, Bolster Plates, Hammer Straps, Rub Irons Clips and Pole Caps, in lots of 50 sets.....dis 45 %
For each order amounting to $20 net, or over, for the following goods: Wagon Hardware, Carriage and Tire Bolts, Rivets, Skein Bolts, Nuts, Washers, Chains, Bevel Box and Tongue Cap Iron, we will allow an extra discount of 10 per cent. off all Wagon Hardware, subject to discount, comprised in the order. Jobbers who do not deal in iron, we allow to substitute Strap and T Hinges in lieu of Bevel Box and Tongue Cap Iron to make order up to $20 worth and secure the extra discount of 10 per cent.
Single Tree Hooks, Nos. 1 and 2.....each, 3½c net
Single Tree Irons, New Pattern.....each, 4½c net
Stay Chain Hooks.....each, 3½c net
Wagon Box Rods, narrow track, with Pat. Collar.....each, 7½c net
Wagon Box Rods, wide track, with Patent Collar.....each, 8½c net
Wagon Brake Ratchets.....each, 7 c net
" " " finished with guard..each, 20c net
Single Tree Iron, Wt. Hook, Malleable Ferrule.....each, 7½ net
Single Tree Iron, Wt. ⅝ Hook and 7-16 Clip..each, 7c net
Single and Double Tree Iron, Wrought Center Clip, ⅝ in. Welded, with ⅛ in. Ring...each. 10c net
Southern Plow Center Clip, ⅛ in. Welded, and 7-16 End Clip with 5-16 in. Hook—per set of 3 pieces. 20c net
Neck Yoke End Ferrule, Malleable, with Wt. Iron Ring.....each, 6½c net
Neck Yoke Attachment, with plates complete.....each, 23c net
Axle Tree Clips, No 1.....each 2½c net
" " No. 2.....3½c net
" " For Farm and Lumber Wagons, Shank, 9-16 in., flat part 1¼ in.....each, 6½c net
Plow and Wagon Clevises.....₱ ℔ 7c net
California Tire Rivets and Burrs, 5-16.....10c net
" " " ⅜ " 11c net
Wagon Box Staples, 1¼ to 2¼ in. to clinch. ₱ 1000 $10 75 net
" " " Bevel Box Iron, to rivet on, ₱ 1000 7 25 net
Neck Yoke Eyes, each.....4½c net
" " with ⅝ rings, each.....7c net
King Bolts, ⅝, 1, 1⅛, and 1¼ in. diam.....₱ ℔ 3½ net
Wagon Rivets, ex. large flat, oval and steeple head, ¼ in. diam., 1 in. and longer.....7 c net
Wagon Rivets, 3-16 in. diam., 1 in. and longer " 8 c net
" ¼ to 1 inch long.....₱ ℔ 1c extra
" & Nails, in 5 ℔ paper boxes.... " 1c extra
" " in 25 ℔ wood " .... " ½c extra
Wagon and Hinge Nails, pointed by hand—
¼x3 and longer. 2½ & 2¾ 2 & 2½ 1¾ and shorter.
11c ₱ ℔. 13c ₱ ℔. 15c ₱ ℔. 17c ₱ ℔ net
3-16x3 and longer. 2½ & 2¾ 2 & 2½ 1¾ and shorter.
12c ₱ ℔. 14c ₱ ℔. 16c ₱ ℔. 18c ₱ ℔ net
Wagon Rivets and Nails, in less lots than one keg each size.....₱ ℔ ½c extra
Double Tree Plates.....7¼c net
Coupling " .....4½c net
Tongue " .....7½c net
Neck Yoke Plates.....8½c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₱ ℔ as No. 12 Band Iron.
Sand Band Iron, 1¼ in. wide, same price as No. 12 Band Iron.
Hub Band Iron, ¼c ₱ ℔ over price of same size Band Iron.
Wagon Chains, Stay, Lock and Tongue, 5-16 in, ₱ ℔ 7c net; ¼ in., 8c net.
Our prices are all subject to change of market, without notice.

BOSTON.

Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.

Anvils.—"Eagle American".....per lb. 9c; dis 20 %
Augers.—Watrous Ship.....dis 10 %
L'Hommedieu ship.....dis 15 %
Axes.—Blue Jacket.....$ 9 00
Racer.....8 00
Red Cross, Handled.....10 50
" " Boy's.....9 00
Blue Jacket " " 10 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2 50, B (No. 1) $2 00, C (No. 2) $1 50 ₩ doz
Blind Hinges.—Orr or Wasnburn's..₩ hun d sets $6 50
Blind Fasts.—
Orr or Washburn's.....per hundred set $4 50
Bolts.—Carriage, Phila.....dis 60&20 %
Carriage Common.....dis 75 %
Borax.—Best Refined.....₩ lb 11c
Borers.—Angle, Backus'.....dis 30 %
Boring Machines.—Angle.....each $4 50
Common, Snell's quality.....each 3 50
Braces.—Barber's.....dis 40&5 %
Backus'.....new list 50&10
Spofford's.....dis 50 %
Bracket
Saw Frames, with patterns complete.....₩ doz $6 00
Saws.....88
Saw Frames, Centennial.....3 50
Star Bronzed.....new list net
Star Japanned.....new list net
Store Shelf.....new list net
Brass Faucets.—L. F. & C.....dis 40 %
Brushes.—Horse, Patent Meta lic.....per doz. $4 50
Butts.—Union Drilled Loose Joint.....dis 62½ & 10%
" " Wire Fast Joint.....dis 45&10 %
" " Acorn Loose J't.....dis 62½&10 %
Brass Butts.....dis 30 %
Wrought Table Butts and Back Flaps.....revised list, dis 33 %
Wrought Narrow Butts.....reduced, dis 40 %
Cards.—
Curry Cards, No. X, per doz., $0 35.....dis 30 %
Horse " No. X, " 0 80.....dis 30 %
Wool " No. 8X, " 2 50.....dis 15 %
Cotton " No. 10, " 3 50.....dis 10 %
Cartridges.—U. S. Cartridge Co.....dis 60 %
Chisels.—"Buck Bros." Shank Goods.....dis 30 %
Socket.....dis 25 %
Compasses and Dividers.—Bemis'.....dis 40 %
P. S. & W.....dis 30 %
Cordage.—Manila (usual trade dis.).....₩ lb 14c
Corn Hooks......per doz $2 75
Crow Bars.—Soli l Steel.....₩ lb, 9c
Cow Ties......dis 30 %
Dividers.—Cook's Nickel Plated.....dis 15 %
Door Springs.—Moseley—

Per doz.	$9 00	12 00	15 00	18 00	24 00
No.	0	1	2	3	4

Torrey's.....$2 50
Gem.....dis 10 %
Drills.—Whitney's with Chucks.....$12 50
Emery.—Alden.....₩ lb 7c
Wellington Mills.....₩ lb 10c
Files.—American.....dis 30 %
Nicholson, new list.....dis 30 %
Wheeler, Madden & Clemson.....$5 to $; 10 %
Stubb's Tapers, genuine, 3 in., $1 50; 3½, $1 88; 4, $2 13; 5, $2 50
Hammers.—Maydole—new reduced list.....dis 15 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, $7 75.....dis 25 %
M., B. & D., solid cast steel, bell face, No. 1, $11; 1½, $9 75.
Hammond—new reduced list.....dis 15 %
Hangers & Rollers.—Anti-Friction.....dis 40 %
Climax.....dis 40 %
Acme Rollers.....dis 40 %
Hatchets.—Underhill Edge Tool Co.....dis 25 %
C. F. Dowse, warranted Cast Steel—
Shingling.....0, $4 75; 1, $5 25; 2, $5 75
Claw.....1, 5 75; 2, 6 25
Lathing.....1, $5 50
Axe Pattern.....1, $7 00; 2, 7 50
Broad.....0, $5 75; 1, $6 50; 2, $7 50; 3, $9 25; 4, $10 75
5, $12 75; 6 $14 75
Hinges.—Strap and T Stanley Works.....dis 60 %
Plate, Loose and Fast Joint.....₩ lb 5c
Wrought Screw Hook.....₩ lb 5c
Knobs.—Imp. Extension Silvered Glass....₩ doz $8 00
Lanterns.—Tubular No. 0.....$10 00
Guarded, No. 74, (with kerosene oil and candle burners).....5 50
Lead.—Sheet, 8c.; Pipe, 7½c.....dis 10 %
Locks.—Norwalk Lock Co.....dis 50 %
Matlocks.—
K. P. & Co., axe finish, long cutter.....$11 50—net
Short cutter.....11 00—net
Meat Cutters.—"Miles's" Challenge.....dis 30 %
No. 1, $22 00; 2, $30 00; 3, $40 00.
Metal.—Babbitt.....No. 1, 35c; 2, 25c; 5, 15c ₩ lb
Nails.—10s and larger.....$2 50
Nail Pullers.—Little Giant—Small.....per doz., $22 00
Little Giant—Large.....30 00
Padlocks.—Wilcox.....dis 33½&5 %
Picks.—A. P. & Co., Solid Eyes.....5 to 6 6 to 7
$9 00 $9 50
Pins.—Universal Hatand Coat all wood—
2 in.....₩ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Planes.—Auburn Tool Co.....dis 40 %
N. Y. Tool Co.....dis 50 %
Plated Ware.—Rogers bros.....dis 40 %
Pocket Knives.—Conn. Cutlery Co.....new net list
American Shear Co.....new net list
Plumb & Levels.—Stanley.....dis 60&10 %
Pulleys.—Axle.
Fr'me pol. wh't pt. face, No. 15, ⅝ in., 20c.; 16, 2 in., 26c.
Pol. wh't br'zed face No. 115, 1⅝ in., 23c.; 116, 2 in., 26c.
Pulley Blocks.—" Best Boston Make".....ne
Rail Barn Door.—For Novelty and Anti-friction Hangers.....per foot 7c., dis 40 %
Refrigerators.—Heinz Patent.....dis 20 %
Rivets.—Black.....dis 40 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8.....dis 30 %
13 13 14 14 15 16c ₩ lb
Sad Irons.—Bless & Drake.....₩ lb 3½c
Sand Paper.....dis 15 & 5 %
M. B. & D.....0 to 2, $4 25; 2 to 3, $4 75
Saws.—*Hand and Panel*—
X Cut, Wheeler, Madden & Clemson.....per ft., 35c
" Champion.....45c
" Lightning.....45c
" Great American.....50c
Wood Saws, Welsh & Griffith.....₩ doz $12 00
Wheeler, Madden & Clemson's, same list as "Disston's".....dis. 20 %
Disston's.....dis. 20 %
Saw Horses.—Extra.....₩ doz $2 25
Folding.....₩ 50
Screws.—Am. Screw Co., new list Sept. 1st dis 60&10 %
Aiken's.....dis 60&10 %
Scythe Stones.—
"Willoughby Lake," first quality.....₩ gross $6 00
" second quality.....3 00
Shovels.—O. Ames.....dis 30 %
M. B. & D.....dis 30 %
Spading Forks.—W. C. & Co.....dis 40 %
Tools.—Aiken's Pattern.....₩ doz $5 00
Aiken's Genuine, $12.....dis 40 %
" Saw Sets, $13.....dis 40 %
Traps.—Oneida.....dis 25 %
Blake's.....dis 40 %
Vises.—K. P. & Co.'s Solid Box. Blacksmith....₩ lb 12c
Parker's Parallel.....dis 10 %
Backus.....dis 25 %
" Howards." Parallel.....dis 25 %
Wardrobe Hooks.—Wire to drive.....₩ gross $1 00
Weights.—Window Weights.....₩ lb 12½
Wedges.—Axe.....₩ doz 93
Wire,—
Eureka in spools, No. 28 to 40 assorted...₩ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green, 4½c
Drab or Black.....₩ ft 4½c
Wrenches.—Genuine Wrenches, G. A. Coes....d's 50 %
" Girard".....dis 50&10 %
Wringers,—Universal XX No. 4.....₩ doz $66 00
Novelty, No. 10.....66 00
" No. 2.....66 00
" No. 22.....70 00
Excelsior A, with bench.....84 00
" E, set tubs.....74 00
Eureka.....57 00
Welcome.....60 00
Witmington, Cooley & Co.—Hoes, Rakes, Forks &c. dis 40 %. Special rate for Export.

ST. LOUIS.

Corrected weekly by Semple & Birge Mfg. Co.

Animal Pokes.....$7 50 ₩ doz. net
Apple Parers.—Conqueror.....₩ doz $7 75
Hunson's Rotary.....7 75
Axes.—Wm. Mann's, Red Warrior.....₩ doz 9 75
"C. Marshall".....9 25
Handled.....$3 extra
Double Bitted.....10 50
Hunt's.....12 00
Axles.—"Jones, Henry & Co.'s" Patent Lubricating, Half Patent Swelled Taper, Plain Taper and Concord Axles.....dis 30 %
Common Axles (Pat. Lubricating), 1¼ inch and upward.....₩ lb. 6c
do. less than 1¼ inch.....6¼c
Babbitt Metal.—

Nos.	4	3	2	1	A 1	Genuine.
	9½	11	16½	20	31	34c ₩ lb.

Bellows.—dest St. Louis make, new list....dis. 12½ %
Bells.—Troy, Church, School and Farm Bells..₩ lb 30c
"Improved Amalgam Bronzed" 15 in., $2 00; 17 in., $2 50; 19 in., $4; 21 in., $5; 24 in., $14; 27 in. $19 50
Belting.—"Boston Belting Co.'s" Rubber. dis 50&10 %
Bradford & Sharp's" Oak-Tanned Leather.....dis 35 %
Boilers.—Farmer's Pronf Feed Boilers.....dis 20 %
" Caldrons.....dis 20 %
" Sugar Kettles.....dis 30 %
Bolting Cloth.—New gold list.....net
Bolts.—Arms, Bell & Co.'s Carriage & Tire, d's 70 & 10%
Butts.—Western Butt Co.'s new list—
Narrow Fast Joint.....dis 35, 12½&10 %
Broad Fast Joint.....dis 35, 12½&10 %
" Loose " .....dis 45, 12½&10 %
Reversible.....dis 40, 12½&10 %
" Japanned and Silver Tipped. dis 50, 12½&10 %
Loose Joint " Acorn " " " .....dis 45, 12½&10 %
Churns.—Julien, No. 2, $7 00; No. 3, $7 50; No. 4, $8 50.....dis 25 %
Cider Mills.
Buckeye Senior $27 00: Buckeye Junior. 18 00.....net
Corn Knives.—Dunn Edge Tool Co.'s Clip...₩ doz 4 50
Seymour Mfg. Co.'s solid Steel Back.....4 50
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers.....dis 10 %
Hand Shellers.....Special rates
Cotton Gins.—Carver, with 10 in. Saws, $6 & saw.net
12 in. Saws, $4 00 & saw.....net

Crow Bars.—Steel Pointed.....₩ lb 6c
Drag Saw Machines.
Cuthbert's Iron Drag Saw.....dis 15 %
Excelsior Drag Saw with Log Trucks.....dis 12½ %
Fanning Mills.—Nash & Cutts.....dis 25 %
Feed Cutters.—Burdick National.....new list, net
Sanford No. 1, $10 00; No. 2, $8 00.....net
Bowman's Lever Cutter, $6 50.....net
Files.—Black Diamond, Mill.....$5 00 & currency
" Bastard.....5 00 & currency
" Taper.....5 00 & currency
Forges and Blowers.
Keystone Portable Forge Co.'s.....dis 10 %
Forks and Hoes.
Auburn Mfg. Co.'s Hay and Manure Forks.....dis 35 %
" Handled Hoes.....dis 35 %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe.....dis 20 %
" Planet Drill, Nos. 2 and 3.....dis 20 %
" Combined Drill and Wheel Hoe.....dis 20
Grinding Mills.—Challenge Feed Mills.....dis 15 %
Sedgebeer's Nonpareil Mills.....dis 15 %
Bradford's French Burr Mills.....dis 5 %
Hammers.—Masons' Hammers.....₩ lb 18c
Smiths' Hand.....18c
Handles.—No. 1 Fork, Hoe and Rake.....dis 25 %
No. 2 Fork, Hoe and Rake.....dis 30 %
Ax, Pick, Sledge and Small Handles.....net list
Hay and Cotton Presses.
Dederick's Railroad.....dis 10 %
" Perpetual.....dis 10 %
Hay Knives.
Dunn Edge Tool Co.'s.....₩ doz $12 00 net
Lightning (Weymouth's Patent).....₩ doz $30 00
Horse Nails.—National Patent Pointed.....20c rate
National Patent Pointed, extra finished.....22c "
Horse Powers.—Pitts or Carey's Patent.....dis 10 %
Wheeler's Railway.....dis 10 %
Sandwich Lever.....dis 10 %
Hose.—
Boston Belting Co.'s Rubber Medium Sizes, dis 30&10 %
" " " S. Stz. Hydrant..dis 40 %
Mattocks and Grub Hoes.
Klein, Logan & Co.'s Mattocks....₩ doz $11 25 @ 11 60
" Grub Hoes, oval eye " 8 30 @ 9 25
Money Drawers.—
Pierpont & Co.'s Excelsior.....per doz $38 00 net
Nails.—Wheeling Riverside Brand.....$2 50 rates
Packing.—Boston Belting Co.'s Rubber, Plain..dis 30 %
Boston Belting Co.'s Rubber, Pure.....dis 25&5 %
" " No. 3 Plain.....dis 40 %
" " Round and Square....dis 10&10 %
Picks.—Railroad and Clay.....₩ doz $8 00 @ 9 75 net
Coal.....6 50 @ 7 20 net
Pole.....9 45 @ 13 15 net
Stone.....11 00 @ 11 60 net
Tamping.....11 75 @ 12 25 net
Miners Drifting.....7 80 @ 10 60 net
Plows.—Avery's Cast and Steel.....dis. 20 %
Avery Solky Plow.....dis 20&5 %
Collins Cast Cast Steel.....new list net
Pekin Steel.....dis 25 %
Plow Sulky.—Buckeye.....$27 00, net
Post Hole Augers.—Clark's Patent—
No. 1, ₩ doz. $27; No. 2, $30; No. 3, $32.....dis 25 %
Pulleys.—3 inch.....per doz $3 70 net
4 inch.....per doz 3 90 net
Pumps.—St. Louis. Farm. Patent Metal Lined..dis 30 %
Rakes.—Advance Paddock Sulky.....each $24 00 net
St. Louis Revolving 14 tooth.....4 45 net
" " 16 " .....4 95 net
" Hand Hay Rake.....per doz $2 50
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives.....dis 40 %
" " Sections.....dis 40 %
Road Scrapers.—Steel.....each $3 50 & 25 %
Cast Iron.....dis 10& 5 %
Saws.—Curtis & Co.....dis 1 %
Scythes.—Dunn Edge Tool Co.'s.....dis 30 %
Scythe Stones.—No. 1 Ind'n Pond ₩ gr's, $7 00
Extra Indian Pond.....7 50
Premium.....10 50
Diamond Grit.....13 00
Shovels and Spades.—Groom Shovel Co.....dis 40 %
Grain Scoops—Patent Cor'd Straps Groom Shovel Co.....dis 40 %, and 50c per box extra
do. M. Rowland & Co., dis 30 % and 50c " "
do. O. Ames & Son, dis 25&5 % and 50c " "
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished.....₩ lb 11c net
Solid Cast Steel.....10c net
Snaths and Cradles.—Seymour Mfg. Co.'s.....dis 40 %
Sorghum Machinery.—Beil Cane Mills.....dis 30 %
Scantlin's Seamless Pans and Evaporators.....dis 30 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express.....₩ lb 14½
Blue Seat Springs.....₩ pair, $1 00
Thimble Skeins.—Whitewater's.....dis 40&10 %
Vises.—Wilson Mfg. Co.'s.....₩ lb. 14½c
Wheelbarrows.—Champion Iron Wheel..₩ doz $9 50
Champion Wood Wheel.....₩ doz 12 50
" Garden.....₩ doz, 39 00
Wagons.—Whitewater Farm Wagons—
Thimble Skein—
2¾ in. $66; 3 in. $67 50; 3½ in. $70; 3½ in. $71
Wire Bale Ties.—Buckeye Double Twist.....net list
Dederick Adjustable.....new list, to 25 %

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Best Char..	$ 7 75	DX, 12¼x17, B. Char.	$10 25
IX, 10x14, " ..	10 25	DXX, 12¼x17 " ..	12 75
IC, 12x12, " ..	7 75	DXXX, 12¼x17 " ..	15 25
IX, 12x12, " ..	10 25	IC, 20x28, " ..	15 00
IC, 14x20, " ..	7 75	IX, 20x28, " ..	22 50
IX, 14x20, " ..	10 25	IXX, 20x28, " ..	28 00
IXX, 14x20, " ..	12 75	IC, 14x20, Best Roof..	7 25
IXXX, 14x20, B. Char.	15 25	IX, 14x20, " ..	9 75
IXXXX, 14x20. " ..	17 75	IC, 20x28, " ..	15 00
IC, 12x24, " ..	8 00	IX, 20x28, " ..	19 00
IC, 14x14 " ..	15 25	IC, 10x14, Best Coke..	6 75
IX, 14x14, " ..	18 25	IC 14x20, " ..	9 75
IXX, 14x14, " ..	21 25	IC, 10x20, " ..	11 00
DC, 12¼x17, " ..	7 75		

Sheet Iron.	Com'n.	S L U Sm'th.	D. Ref'd Sm'th.	Juniata Sm'th
No. 16 to 20	3 20c	4 2c	6 c	7 0c
No. 22 to 24	3 40c	4 2c	6 c	7 0c
No. 26	3 40c	4 4c	6 4c	8 1c
No. 27	3 60c	4 6c	6 6c	8 3c

Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12.....per lb. 13½c
No. 1 Stained—No. 9, 10, 11, 12.....per lb. 23c
Tare 22 lbs. to Bdle. For less than Bdle. add 1c. ₩ lb.
Patent Planished Iron.
No. 24 to 27, A quality.....per lb. 11c
" B " 9½c
For less than Bdle. add 1c. per lb.
Galvanized Sheet Iron.
Juniata, or 1st quality.....dis 35 %
Block Tin.
Bancs, Large Pigs.....32c | do. Small.....31c
Straits, Large Pigs.....30c | Bar.....32c
Eng. Ref'd, Large Pig...36c

Solder.			
Extra in Bars	14c	No. 2. in Bars	12c
No. 1, in "	13c	Spelter Solder	26c
Pig Lead —Pigs	7c	in Bars	8c
Antimony			9c
Bismuth			$2 75
Nickel			3 00
Crucibles.—Dixon's			₩ No. 6c

Babbit Metal.

No. 1	₩ lb. 18c	No. 3	₩ lb 13c
" 2	" 16c	" 4	" 8½c

Copper.
Brazier's, 30x60, 14 to 100 lbs. Sheets.....30c
" 10, 11 & 12 lbs., " 32c
" 8 and 9 lbs. " 34c
" 6 and 7 lbs. " 35c
Tinned, 14x48, 14 and 16 oz.....30c
Planished, 14x48, 14 and 16 oz.....38c
" Boiler Sizes. 14 and 16 oz.....4 c
Gutter Copper, 20 and 24x72, 10, 11 and 12 lb. Sheets.32c
" 14 lb. sheets.....30c
Reservoir Copper, 16x60 and 18x60.....33c
Bar Copper, Square and Round, ⅜ to 1⅜ inch.....31c
" " " ⅜ inch.....34c
Copper Bottoms.....30c
Soldering Coppers.....33c

Brass.			
Roll, No. 10 to 28, 12 in. in width			30c
" 30, 12 in. in width			31c
" 32, 16 "			30c
" 34, 16			37c
" 36, 16			38c
Platers, No. 40, 6			53c

Brass and Copper Wire.

	Brass.	Copper.		Brass.	Copper.
No. 0 to 20	34c	43c	No. 24	39c	49c
" 21	35c	46c	" 25	42c	53c
" 22	36½	47c	" 26	44c	56c
" 23	37c	48c	" 27	46c	6 c

Brass Spring Wire, 2c. ₩ lb advance.

Brass Tubing.			
Plain to No. 20	43c	5-16 inch	50c
⅜ inch	50c	⅜ "	8 0c

Copper Rivets and Burs.....dis 10 %
Brass Kettles.....₩ lb 43c
Sheet Zinc.—600 lbs. cask.....8c
250 lbs. cask.....8¼c
Sheet.....8½c
Wire.—Iron, Bright Market.....dis 50 %
Iron, Coppered Market.....dis 45 %
Fence, Nos. 7, 8 and 9.....₩ lb 4½c
Trellis, Nos. 10 and 11.....5
" No. 14.....5 25
Hay Baling, Charcoal, No. 10 and 11.....3½c
" " No. 12.....3½c
Broom, Tinned, Nos. 18 to 22.....17c
Fence Staples.....per keg 6c
Per lb.....6½c
Iron Rivets.—Black, papered.....dis
Tinned, papered.....dis
In bulk.....new 3-16 ⅛ 5-16 ⅜ in. diam.
11½c 10½c 10 c 9½c per lb.
Sad Irons.....$ to 3½c
Enameled Kettles.—Standard Mfg. Co.....dis
Enameled Sauce Pans.
Standard Mfg. Co.....dis
Enameled Boilers.—Standard Mfg. Co.....dis
Dripping Pans.—Smooth Iron.....₩ lb
Geneva Fluters.....per doz $15 00
Monroe Fluters.....14 50
Stove Polish.—Dixon's.....per gross 6 00
Gem.....4 50
Japanese.....3 50
Dixon's, in bulk.....₩ lb 10c
Coffee Mills.—Parker's.....dis 20 %
Granite Iron Ware.....dis 75 %
Spoons.—New list.....dis 10 %
Retinned Iron Ware.....45 % off
Plain Stamped Ware.....45 % off
Japanned Ware.—St. Louis list.....dis 40&5 %
Fry Pans.....dis 60 %
Bars.....dis 90 %

THE JUDSON GOVERNOR.

It is a common method to advertise Governors *without cost,* unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not for much inferior Governors, pay higher prices than those shown in the accompanying list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

Reduced Price List,

FEBRUARY 1, 1877.

☞ For dimensions of Governor, see Illustrated Price List.

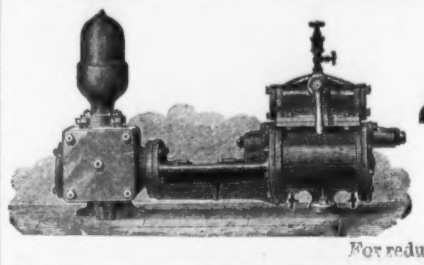
THE JUDSON PATENT

Improved Steam Governor.

Size, Inch.	Plain.	Bright Finished.	Extra for Sped'r	Stop Valve.
⅜	$16·00	$18·00	$1·90	..
¾	18·00	20·00	1·90	..
1	20·00	22·00	2·00	$5·00
1¼	23·00	26·00	2·25	6·00
1½	26·00	30·00	2·50	8·00
2	31·00	35·00	2·75	10·00
2½	36·00	41·00	3·25	12·00
2½	40·00	45·00	3·50	14·00
2¾	45·00	51·00	3·75	16·00
3	50·00	57·00	4·25	19·00
3½	59·00	67·00	4·50	23·00
4	69·00	78·00	5·00	28·00
4½	80·00	90·00	5·50	34·00
5	90·00	101·00	6·00	40·00
5½	105·00	117·00	6·50	46·00
6	120·00	133·00	7·00	54·00
7	142·00	156·00	8·00	65·00
8	175·00	192·00	9·00	79·00
9	198·00	218·00	10·00	..
10	210·00	240·00	12·00	..

No Charge for Boxing & Cartage.

JUNIUS JUDSON & SON, Rochester, N. Y.



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Manufacturers of the following *Patented* Articles of

MALLEABLE IRON:

Hammer's Adjustable Clamps.
Hammer's Malleable Iron Oilers.
Hammer's Mall. Iron Hand Lamps.
Hammer's M. I. Hanging Lamps.

For Sale by all the principal Hardware Dealers.

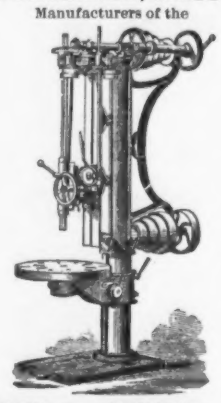
Malleable Iron Castings

Of superior Quality and Hardware Specialties in Malleable Iron made to order.

P. BLAISDELL & CO.,

WORCESTER, MASS.,

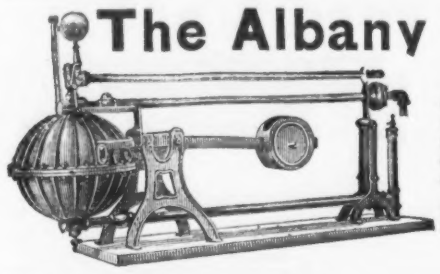
Manufacturers of the



"BLAISDELL" UPRIGHT DRILLS

And other First-Class Machinists' Tools.

The Albany Steam Trap.



This Trap automatically drains the water of condensation from *Heating Coils,* and returns the same to the Boiler *whether* the Coils are *above or below* the water level in Boiler, thus doing away with pumps and other mechanical devices for such purposes. Apply to

Albany Steam Trap Company,
Albany, N. Y.

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HYDRAULIC ELEVATORS

For Stores, Warehouses, Residences and Hotels.

These elevators have advantages over special steam service, in first cost of construction, running expense, convenience, cleanliness and saving of insurance.

We have a large number in operation and they have been fully tested. Satisfactory results guaranteed.

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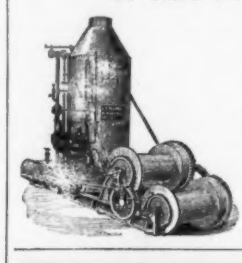
Hoisting Engines

OF ANY POWER,



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Improved Patent Friction Drums.

Adapted for Mines, Dock Building, Pile Driving, Quarries, &c.

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The Pratt & Whitney Co.,

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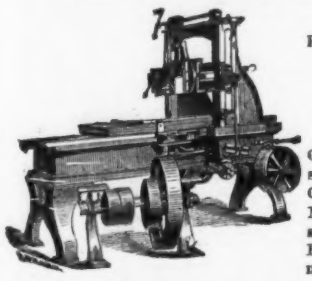


Have constantly on hand and making

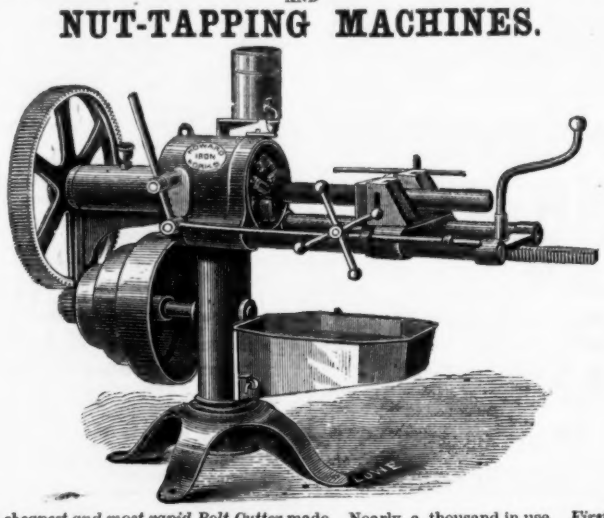
Drop Hammers

Of recently Improved Construction. Pony Trip Hammers, Blacksmiths' Sheaves, Broaching and Stamping Presses, Iron Shop Cranes, Machinists' Tools, Gun and Sewing Machine Machinery. Make to order Gray and Charcoal Iron Castings of all styles and sizes not exceeding 15 tons weight, (making patterns if desired). Furnish Clamp Pulleys of light patterns, cut gears in a superior manner, &c., &c.

Schlenker's Bolt Cutters

AND

NUT-TAPPING MACHINES.



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CLIPPER Vertical Engines, off and on wheels! Price on wheels, 6 horse-power, $485; 8 horse on wheels, price, $700. **Dry Steam** Horizontal Engines, 8 horse power Climax, on wheels, $925. Builders of Stationary Engines, 4 styles, from 6 to 200 horse-power. Corliss Engines, Extra Finish and Cut-Off Engines, Crank, Stationary and Plain Finished Engines. Boilers, Circular Saw Mills, &c. Successors to Utica Steam Engine Co., formerly Wood & Mann. Established 1857. We have the *largest* line of Engine Patterns in the United States.

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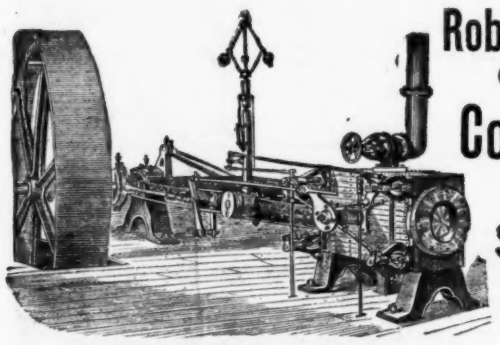
CHESTER, PA.



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BUILDERS,

Shafting & Gearing,

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Exclusive manufacturers of the **Renowned**

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The most Durable, Reliable & Economical Lubricant in existence;

Applicable to every grade of machinery. Send for Circular and Price List.

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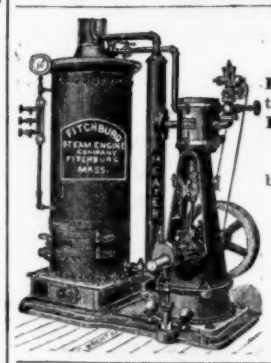

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Hundreds in use, of all sizes, and all giving more than satisfaction.

Engines, combined as in cut, 2 to 12 H. P. Engines on independent beds, **2 to 100 H. P.**

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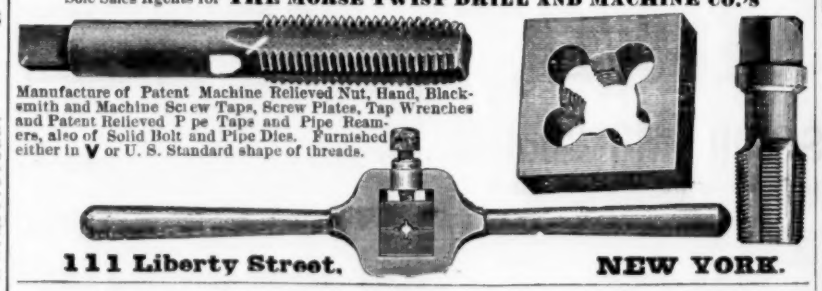

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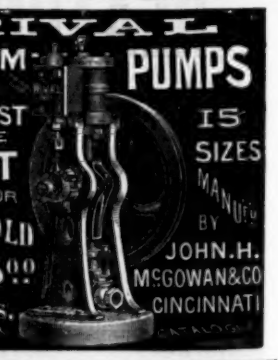

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Patentee and Sole Manufacturer.

I warrant every part of this Machine to stand the shock of the wheel running at 125 revolutions.

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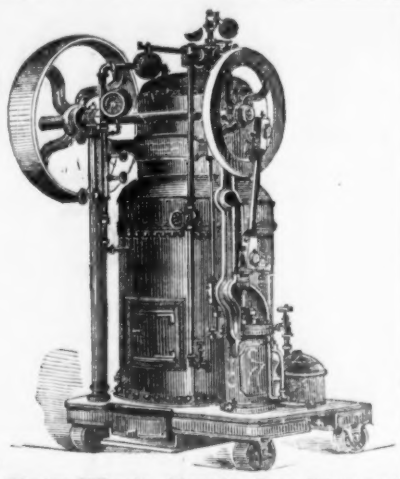

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$200·00.

Cheaper than any Engine offered of the same capacity.

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Engineer, Machinist, Founder and Boilermaker.

CASTINGS of every description.

ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE

Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.

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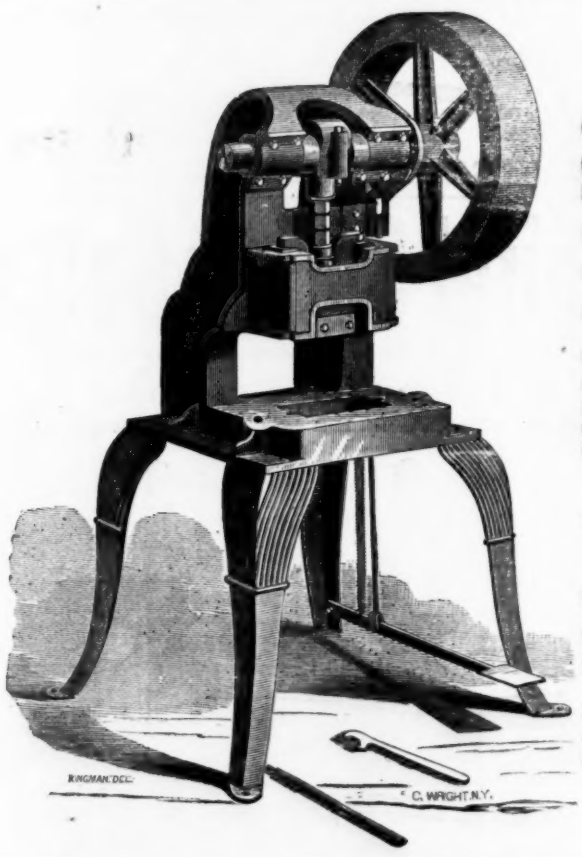

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PUMPING ENGINES, for City and Town Supply a Specialty.

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And Direct-Acting Steam Hammers.

Communications by letter will receive prompt attention.

JACKS for Pressing on Car Wheels or CRANK PINS made to order.

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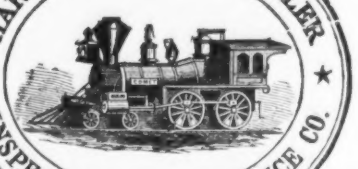

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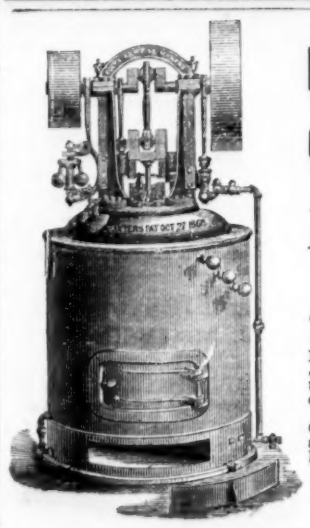

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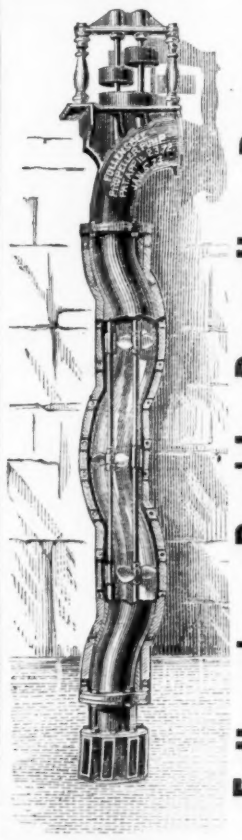

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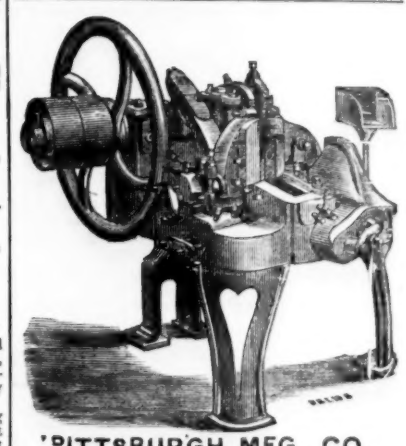

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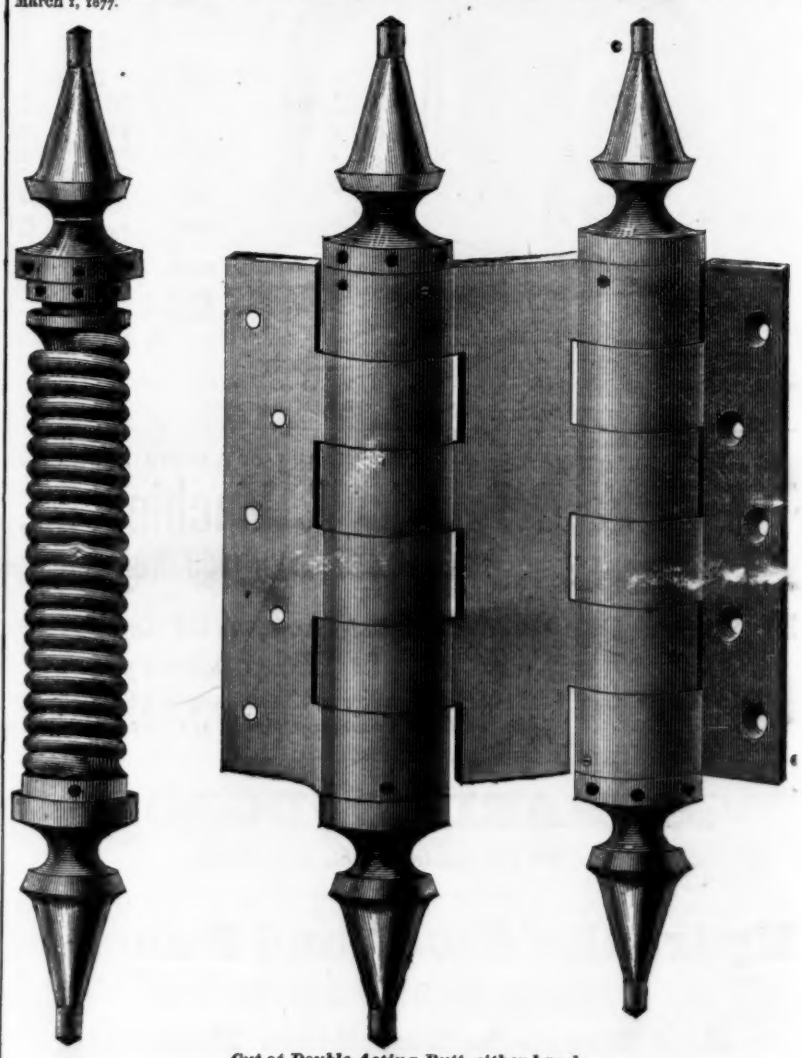

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